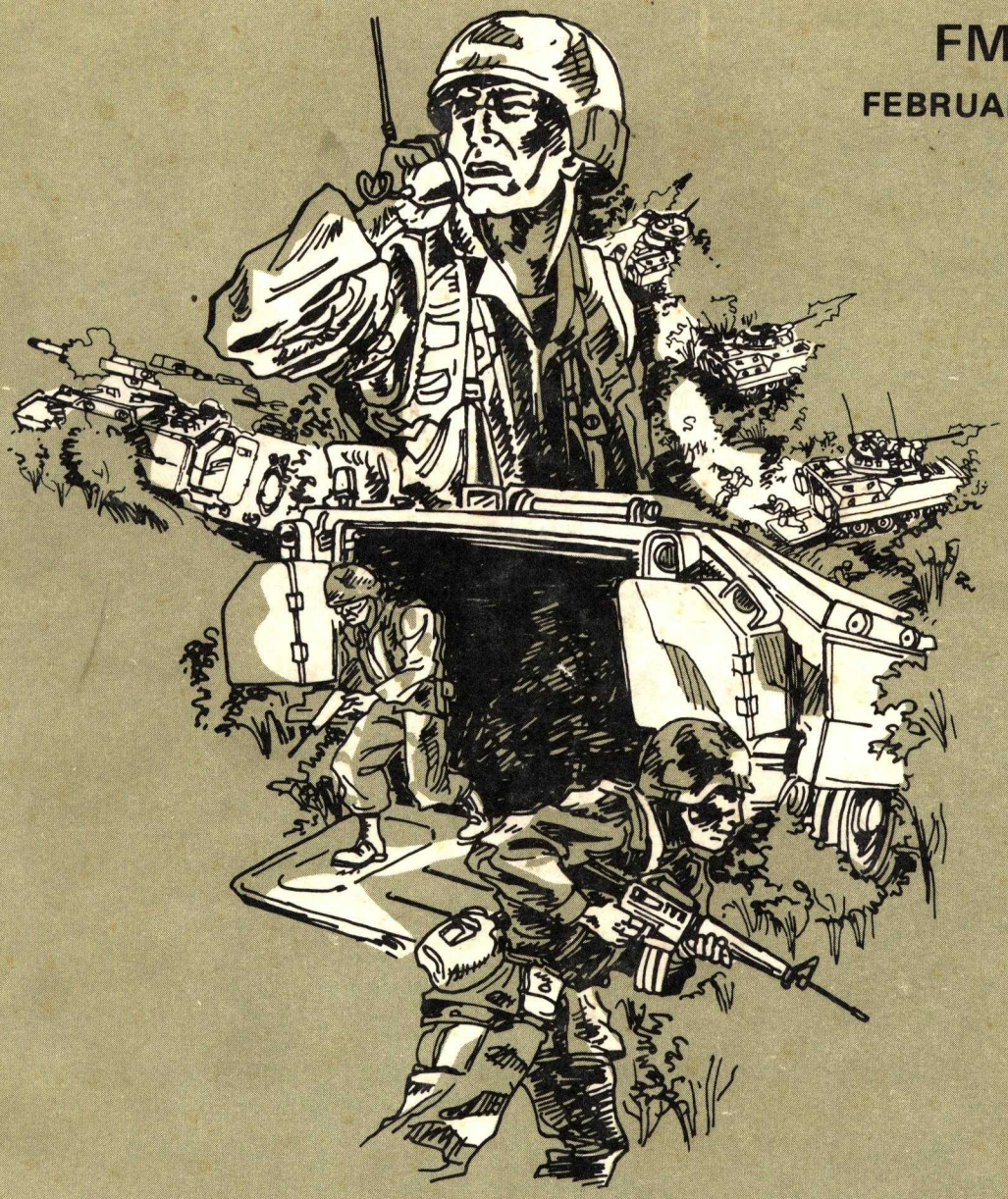
FM 7-7J

FEBRUARY 1986



The Mechanized Infantry Platoon and Squad (Bradley)

HEADQUARTERS, DEPARTMENT OF THE ARMY

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FIELD MANUAL
No 7-7J

FM 7-7J
HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 18 February 1986

THE MECHANIZED INFANTRY PLATOON AND SQUAD (BRADLEY)

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PREFACE

This publication evolved from Special Text 7-7-1, which was the first attempt to establish standard tactics, techniques, and operational procedures for the mechanized infantry platoon and squad equipped with the M2 Bradley fighting vehicle (BFV).

The evolution of weaponry establishes a continuing need to develop and refine methods and techniques of employing weapon systems to maximize their potential. Through its lethal weapon system, its survivability, and its mobility, speed, agility, and fightability, the BFV gives its platoon/squad the means to endure as an effective battleground fighting element.

The BFV is a potent battlefield weapon system. However, its combat power will be only as good as the platoon/squad that employs it. Each soldier must perform his assigned tasks skillfully to make the vehicle an effective weapon in battle.

This manual discusses the tactics, techniques, and operational procedures for the mechanized infantry platoon and squad equipped with the BFV. Units equipped with the M113A1/2 armored personnel carrier (APC) should use FM 7-7.

The proponent of this publication is HQ TRADOC. Submit changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward it to the Commandant, US Army Infantry School, ATTN: ATSH-B-ID, Fort Benning, GA 31905-5593.

The provisions of this publication are the subject of the international agreement(s) listed on page Reference-2.

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

CHAPTER 1

Introduction to the Bradley Fighting Vehicle

The Bradley fighting vehicle (BFV) represents the most dramatic improvement in infantry combat capability since the introduction of the machine gun. The infantry now has unprecedented firepower, armor protection, and battlefield agility; yet, it retains its traditional role of fighting on foot.

The BFV is not an improved armored personnel carrier (APC); it is truly a fighting vehicle. Infantrymen must master this new dimension. The fundamentals of tactical doctrine remain unchanged, but they must be modified to capitalize on the BFV's capabilities and its role in combat.

The BFV is an excellent companion to the M1 Abrams main battle tank in the combined arms team. It is unique in that it is a very capable combat vehicle that requires a fully trained crew to properly fight the vehicle; yet, at the same time, it carries a rifle team whose primary role is to dismount and fight on the ground. The leadership of the BFV platoon is balanced between the fighting vehicle and the dismounted rifle team. Many of the old methods of command and control, and roles of the leaders are evolving to accommodate this new and powerful capability.

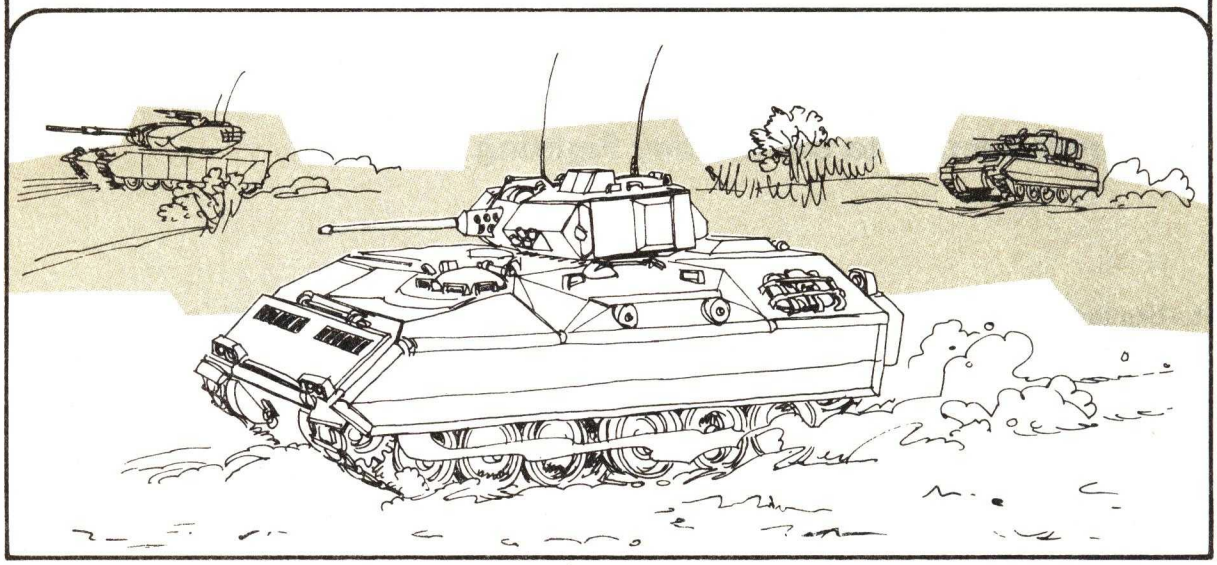
The basic level of tactics for Bradley infantry is the platoon. Below this level, Bradley squads normally execute drills. The decisions of fighting mounted or dismounted as well as decisions on the interaction between the dismounted rifle teams and BFVs of the platoon are made at platoon level.

1-1. Battle Drills.

Battle drills are standardized actions in response to common battlefield occurrences. They are designed for rapid-reaction situations. Battle drills are set plays and should be established for mounted and dismounted operations, become part of the platoon SOP, and be practiced to perfection. Though the estimate process should be used

and the factors of mission, enemy situation, terrain and weather, and troops and time available (METT-T) should be analyzed, time is often not available to do so. Therefore, drills must replace the METT-T analysis process in those situations.

THE BFV



1-2. Employment Considerations.

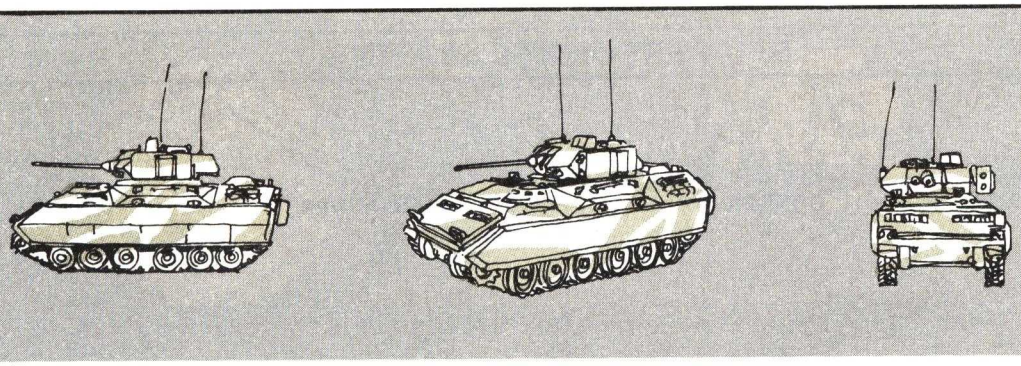
a. There will be times when mounted infantrymen can observe the battlefield, fire their weapons, and be protected by the vehicle's armor, but the fighting vehicle is not invulnerable. The armor protects against small arms and machine gun fire (up to 14.5-mm) and shell fragments; it does not protect against tank or antitank guns, missiles, or rockets.

b. Therefore, the infantry leader must carefully analyze every situation and weigh the advantages and disadvantages of mounted and dismounted combat. The capability of the vehicle makes fighting mounted a possibility; however, many combat tasks can only be performed dismounted. That is why there are infantrymen in the vehicle. When infantrymen dismount to perform their traditional tasks, they will have unprecedented supporting firepower from the BFV.

c. When the situation requires dismounted operations, the normal relationship between the squad and the BFV changes. At the moment of dismount, the squad reorganizes into two elements: the vehicle crew and the rifle team. In addition, the relationship of the

squad leader to the BFV squad is also changed since both elements cannot be effectively controlled by one man after dismount occurs. The squad leader controls one element and the assistant squad leader controls the other. Both leaders report directly to either the mounted or dismounted element leader (platoon leader or platoon sergeant) while overall control of the platoon continues to be exercised by the platoon leader.

BFV CHARACTERISTICS

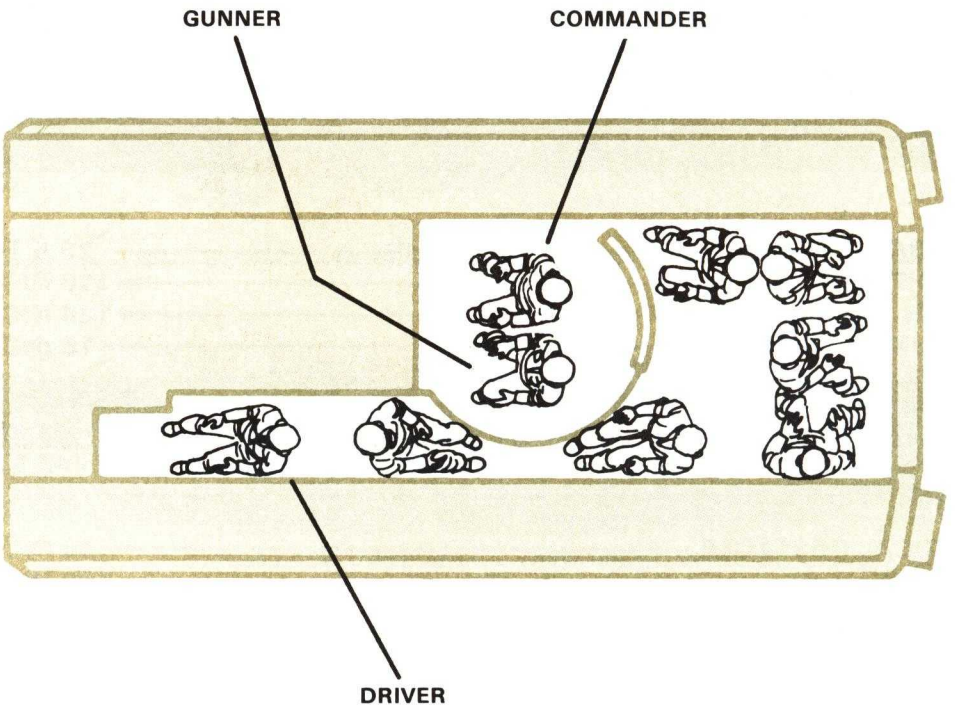


COMBAT WEIGHT	23.5 TONS
HEIGHT	116 INCHES
WIDTH	128 INCHES
GROUND CLEARANCE	18 INCHES
ACCELERATION (0 TO 32 KMPH)	7.7 SECONDS
ROAD SPEED	66 KMPH
CROSS-COUNTRY SPEED	48 KMPH
CRUISING RANGE	480 KM
VERTICAL OBSTACLE	36 INCHES
TRENCH	100 INCHES
FORDING DEPTH	SWIM
MAIN ARMAMENT — 25-MM	900 ROUNDS
MAIN ARMAMENT — TOW	7 ROUNDS
MAXIMUM EFFECTIVE RANGE — 25-MM	2,700 METERS
MAXIMUM EFFECTIVE RANGE — TOW 2	3,750 METERS
SECONDARY ARMAMENT	7.62 COAXIAL
MAXIMUM RANGE	900 METERS
NBC PROTECTION	INDIVIDUAL
INTEGRAL SMOKE	LAUNCHER AND ENGINE
ARMOR DESIGN	SPACED LAMINATE

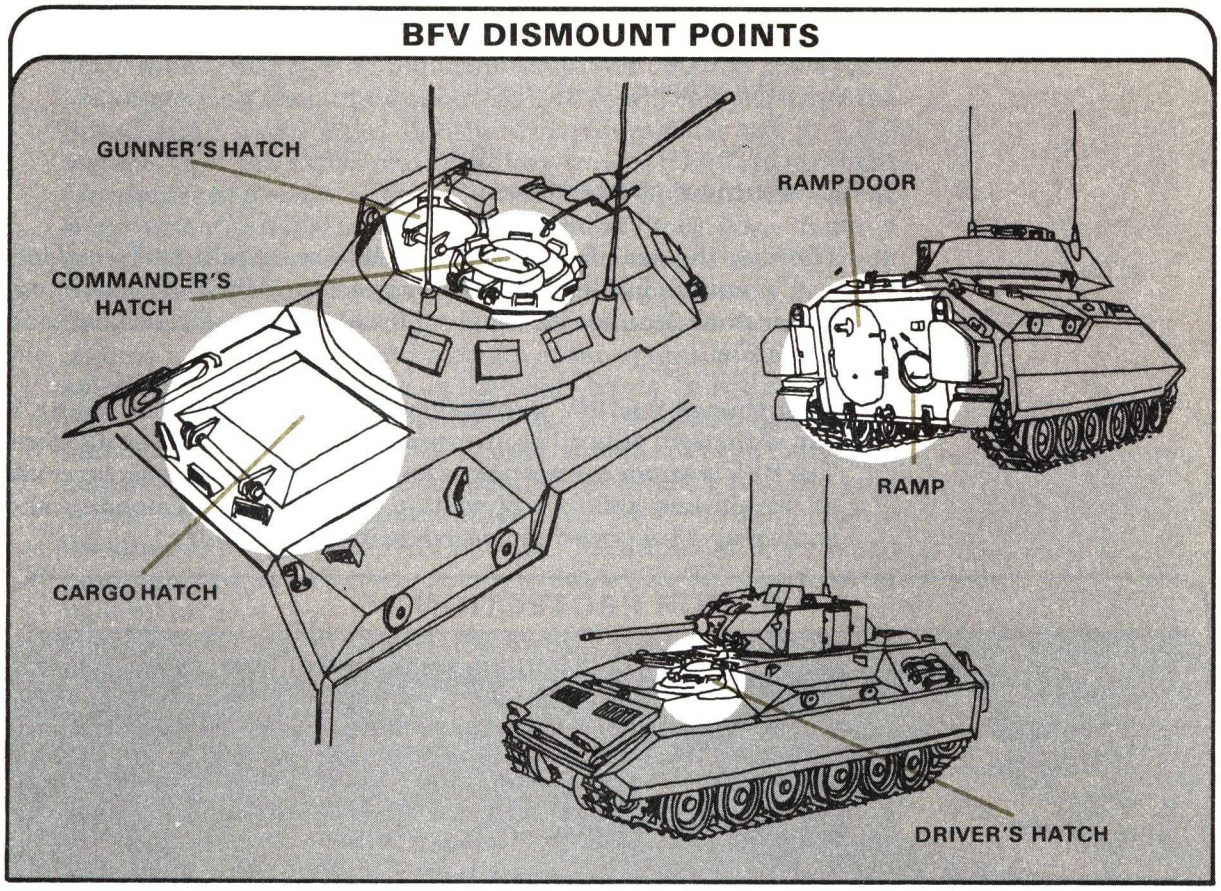
1-3. Personnel.

a. The BFV carries a nine-man squad. The commander and the gunner ride in the turret. The driver rides in the left front station. The other six men ride in the rear troop compartment. Vision blocks are available so that all squad members can view a portion of the battlefield. All six men in the troop compartment operate firing-port weapons. The BFV commander and the gunner can operate all the turret weapons.

BFV PERSONNEL SEATING



b. The squad can rapidly mount or dismount the vehicle through six points: commander's hatch, gunner's hatch, driver's hatch, cargo hatch, ramp door, and ramp.



1-4. Mobility.

a. The BFV has acceleration and speed far superior to the APC. Cross-country speeds of 48 kilometers per hour (kmph) can be expected; its cruising range is 480 kilometers.

b. Mobility and agility come from the combination of engine power, power train efficiency, and suspension system.

(1) **Engine power.** The 500-horsepower (hp), turbocharged diesel engine permits rapid acceleration and sustained high speeds.

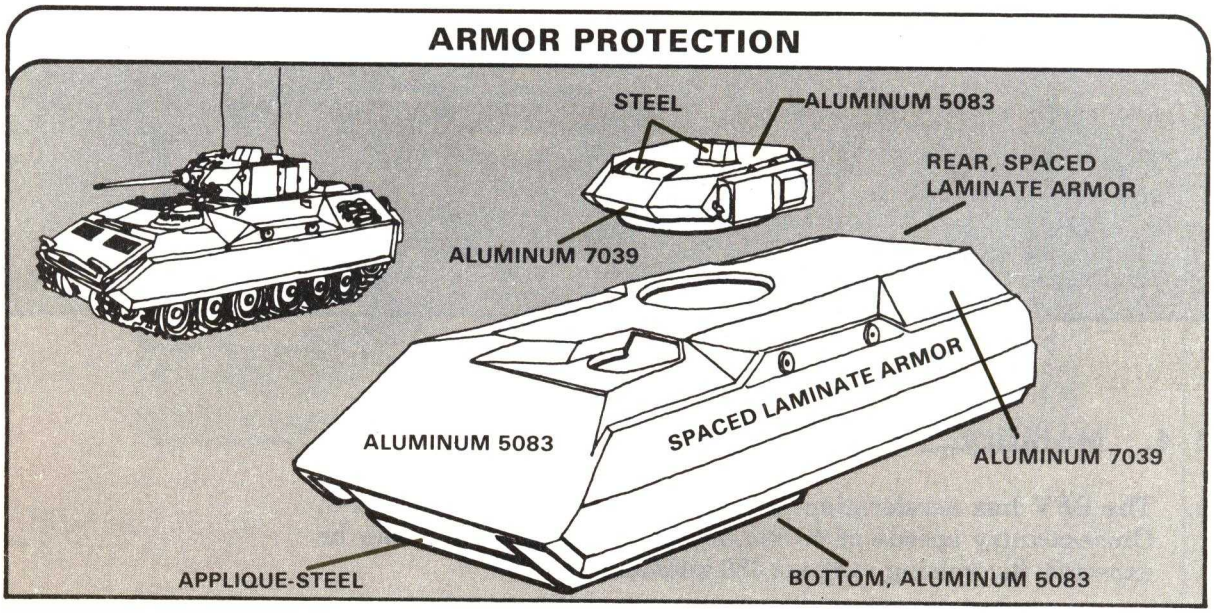
(2) **Power train efficiency.** The hydromechanical transmission permits the driver to maneuver the vehicle easily, even in difficult terrain.

(3) **Suspension system.** The suspension system has 14 inches of vertical wheel travel and high-performance shock absorbers. These allow the vehicle to move over the roughest terrain at high speeds with minimum shock and stress to the squad and the vehicle.

1-5. Armor protection.

a. Through the use of special armorplate materials, surface slope, and a unique laminate armor system, the BFV has maximum armor protection for its weight (49,200 pounds with combat load [class 25]).

b. Even though the BFV's armor cannot compare to that of a tank, it can withstand projectiles up to and including 14.5-mm on all sides. The BFV's armor cannot defeat antiarmor weapons; but clever use of terrain and skillful application of the vehicle's mobility and suppressive firepower can decrease its vulnerability.



1-6. Firepower.

The vehicle's main armament is a 25-mm high-velocity, flat-trajectory, rifled, fully automatic, externally powered gun. The BFV's armament also includes a two-tube antitank missile launcher and a 7.62-mm coaxially mounted machine gun. The all-electric, fully stabilized turret

permits accurate fire even when the vehicle is moving over rough terrain.

a. **The 25-mm gun.** The primary BFV weapon accurately delivers both armor-piercing and high-explosive (HE) rounds. The 25-mm armor-piercing discarding sabot (APDS) round can penetrate the Soviet BMP and similar lightly armored vehicles out to 2,700 meters. The high explosive incendiary-tracer (HEI-T) is excellent for suppressing antitank guided missiles (ATGM) and crew-served weapons out to 2,500 meters (tracer burnout limit). Nine hundred rounds of 25-mm ammunition can be carried aboard the BFV; only 300 can be loaded at any given time. Reloading the ready boxes for the 25-mm is time consuming and difficult to do on the move. All leaders and gunners must be aware of the operational impact of using all of the ammunition in the ready boxes. In addition, if the remaining few rounds are fired after the LOW AMMO light comes on, and all of the ammunition is used, it requires even more time because the new ammunition must be fed directly into the gun, rather than linking it to ammunition in the tray. The 25-mm gun is designed to be used primarily against BMPs and lightly armored vehicles, and to suppress enemy troops who are dug in or in built-up areas.

WARNING

The BFV should never fire armor-piercing discarding sabot ammunition while dismounted friendly troops are within a gun arc of 10 degrees and within 400 meters unless overhead cover is available for dismounted troops. If rounds are fired over the dismount element, dismounted infantrymen could be endangered by pieces of metal or plastic that fall off rounds fired from the BFV.

b. **Antitank missile launcher.** The tube-launched, optically-tracked, wire-guided (TOW) missile is an accurate antitank weapon from 65 to 3,750 (TOW 2) meters. Two TOW missiles can be carried in the turret-mounted launcher. There is internal space for stowing five missiles, either TOW missiles or Dragons or a mix.

WARNING

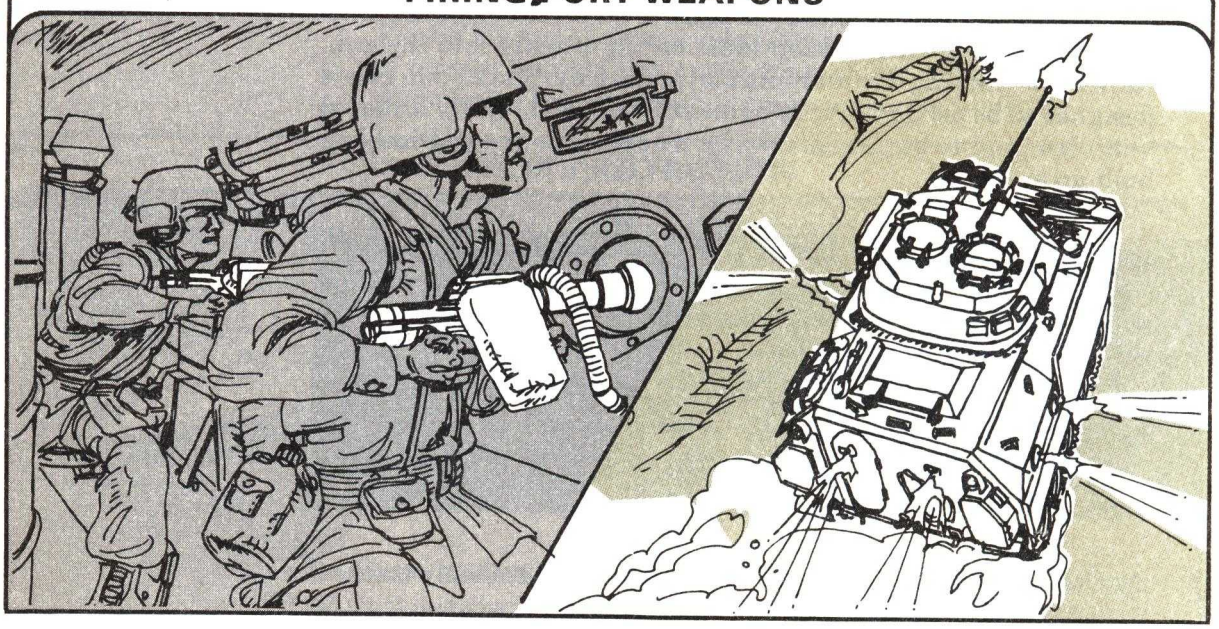
The vehicle must be level for the TOW to be fired.

c. **Coaxial machine gun.** The 7.62-mm coaxial machine gun is an accurate and reliable antipersonnel weapon. The main use of this

weapon is against close-in dismounted forces. It can also be used to suppress crew-served weapons and engage unarmored vehicles and aircraft out to 900 meters (tracer burnout). The BFV can carry 2,340 rounds of 7.62-mm ammunition.

d. **Firing port weapons.** The vehicle has six M231 5.56-mm firing port weapons — two on the left side, two on the right, and two in the rear. These weapons provide close-in, all-round protection and suppression out to 200 meters. The vehicle carries 4,200 rounds of ammunition for the firing port weapons.

FIRING PORT WEAPONS



e. **Dismounted weapons.** The rifle team can dismount the BFV with the following weapons: one M47 Dragon medium antitank system; two M203 40-mm grenade launchers (mounted on M16A1 rifles); five additional M16A1 5.56-mm rifles; two 5.56-mm squad automatic weapons (SAW); and light antitank weapons (LAW), grenades, and mines. Until the M249 SAW is fielded in mechanized units, one M60 light machine gun (LMG) will be retained by the squad. The vehicle has stowage space for 2,520 5.56-mm rounds for the M16A1 rifles and SAWs. These figures do not include the ammunition the soldiers may carry in load-bearing equipment (LBE).

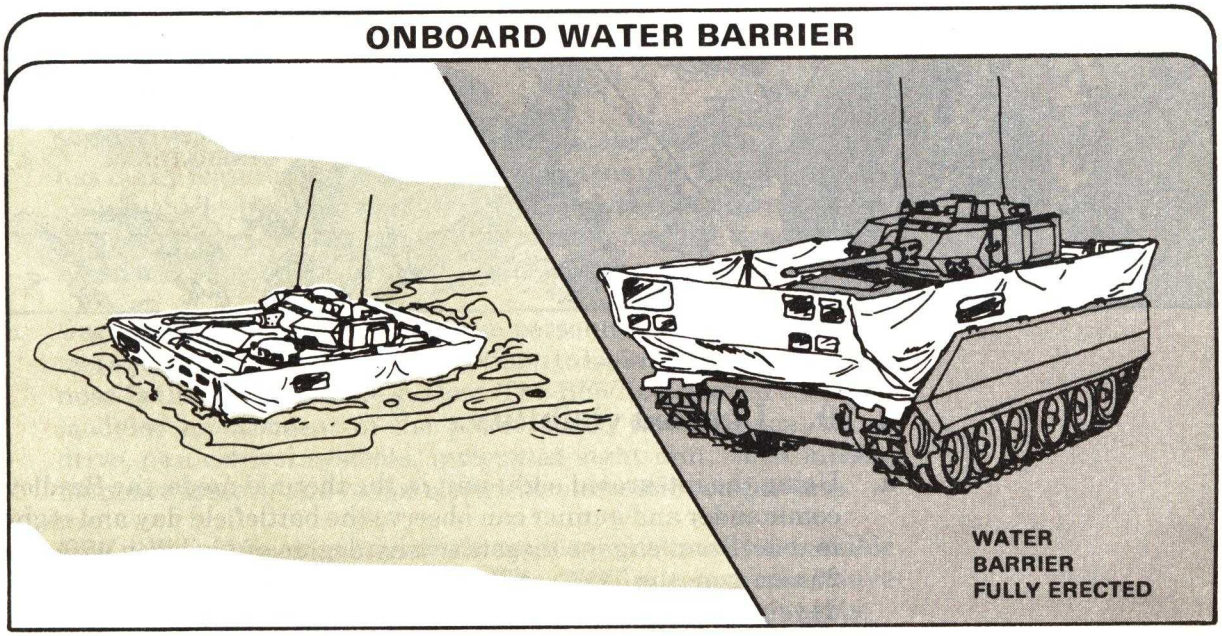
1-7. Communications

a. The BFV's communication systems provide for control of mounted and dismounted operations. All four platoon vehicles have an AN/VRC-46 and two of the vehicles, those of the platoon leader and platoon sergeant, also have an AN/GRC-160 radio. In addition, each fighting vehicle has an intercommunication (intercom) system.

b. For dismounted operations, the AN/GRC-160 radio can be backpacked in an AN/PRC-77 configuration. The platoon's communications ability will be enhanced by the future introduction of SINCGARS, voice-secure family of radios.

1-8. Water-crossing capability.

The BFV can ford up to 3.5 feet of water with little preparation. With its water barrier erected, the vehicle can swim water obstacles with currents up to 6.4 kilometers per hour. It has a maximum speed of 7.25 kilometers per hour while swimming. The vehicle's barrier requires about 15 minutes to erect. The BFV requires an exit bank slope not greater than 17 percent and can fire both its 25-mm and 7.62-mm systems while swimming, though care must be taken not to hit the trim vane/water barrier.

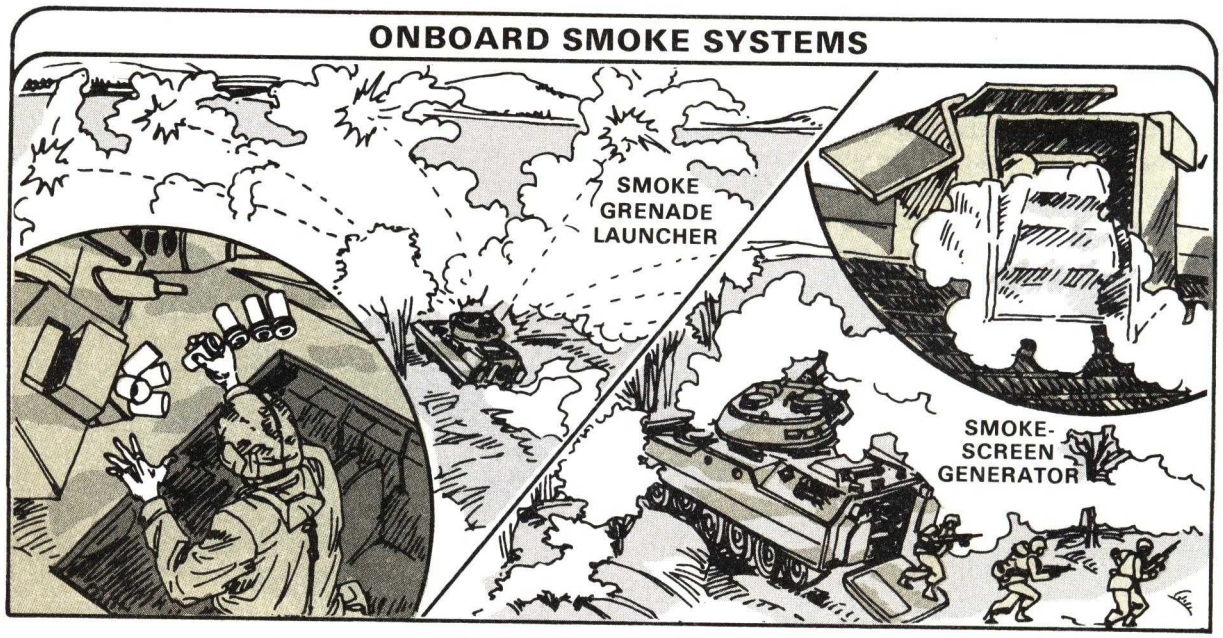


1-9. Smoke capability.

a. The BFV has two onboard smoke systems. The first, a smoke-screen generator, creates a dense smoke cloud by introducing diesel fuel into the engine's exhaust system.

b. The BFV also has eight smoke-grenade launchers mounted on the front of the turret, four to a side. They are fired simultaneously and they produce a dense cloud of smoke around the vehicle. The launchers must be reloaded from the outside before they can be refired.

c. Smoke obscurants can be effective as a defense against attacking Threat helicopters and fixed wing aircraft. They can also be used for obscuring air- or ground-launched guided missiles.



1-10. Limited visibility.

a. Using the integrated sight unit in the thermal mode, the Bradley commander and gunner can observe the battlefield day and night to detect and engage targets in any degree of visibility with the 25-mm gun, the TOW, or the 7.62-mm coaxial machine gun. The daysight has normal optics. The nightsight uses thermal imagery

that enables the gunner to "see" through most limited-visibility conditions, including darkness, smoke, light foliage, camouflage, light fog, and mist.

b. The driver has excellent driving capability using the AN/VVS-2 driver's night viewer. This viewer is an image intensification device that allows the driver to see clearly to his front, even on the darkest of nights. With it, he can handle his vehicle well on the roughest terrain and drive at speeds up to 48 kilometers per hour on night road marches. Also, during darkness, he can use the viewer to assist the Bradley commander and gunner in sensing rounds fired to the front from the turret weapons. It is, however, prone to "white out" if light is shined directly at it (for example, oncoming headlights, flashlight). When installed, it obscures the speedometer/odometer on the dashboard. It is battery powered or can be run directly off the vehicle.

c. The Bradley commander can control the vehicle's night movement by wearing the AN/PVS-5 night vision goggles.

d. The squad has two types of night vision devices for dismounted operations. These include two AN/PVS-4 weapons' nightsights (starlight scopes) and one AN/TAS-5 thermal night-vision sight for the Dragon system.

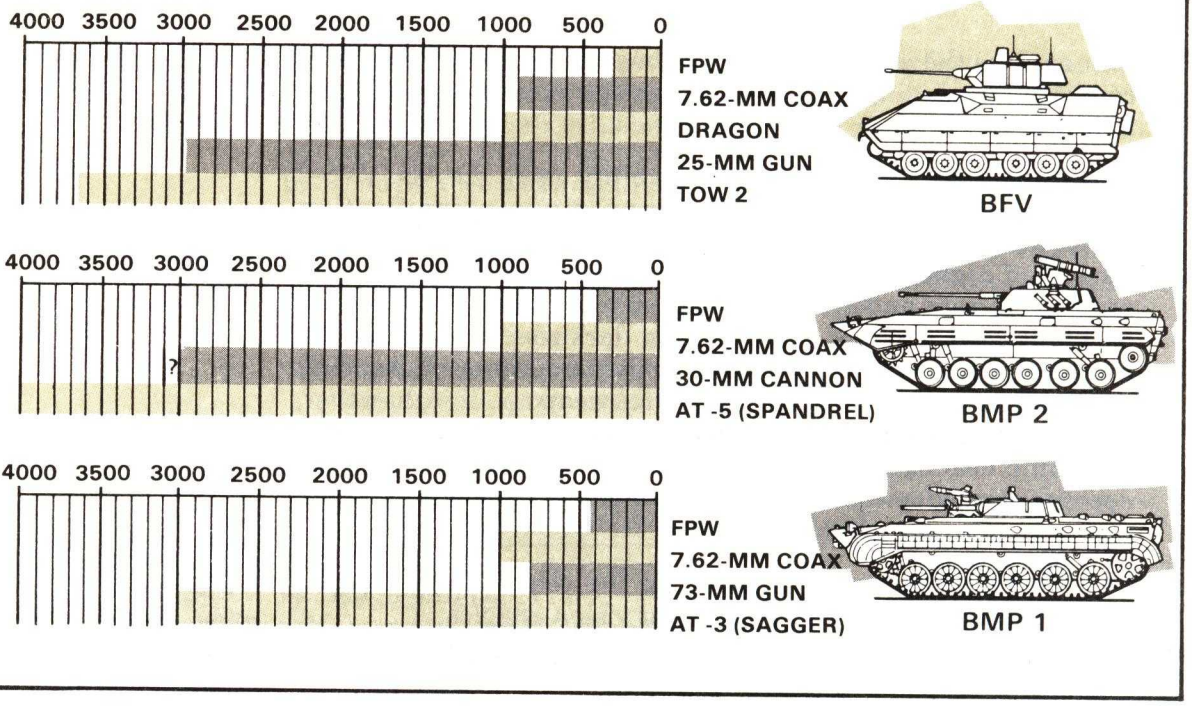
1-11. Maintenance.

a. Though the fighting vehicle is a sophisticated weapon system, it has many features that simplify its maintenance. The complexity of the vehicle, however, demands that leaders become actively involved and continuously emphasize maintenance. The Bradley commander is responsible for all operator/crew level maintenance.

b. Organizational-level maintenance personnel have standardized test equipment (STE) that allows them to isolate and rapidly diagnose faults in the vehicle system. The BFV is designed for rapid modular replacement of the power plant, transmission, turret drive, gun control systems, integrated sight unit, TOW missile launcher system, and major electrical/electronic components.

c. BFV test equipment connections are located at easily accessible points with standard connectors. The modular components have quick disconnects and fasteners for rapid replacement of parts.

BFV VS. BMP


4000 3500 3000 2500 2000 1500 1000 500 0
FPW
7.62-MM COAX
DRAGON
25-MM GUN
TOW 2
BFV
4000 3500 3000 2500 2000 1500 1000 500 0
FPW
7.62-MM COAX
30-MM CANNON
AT -5 (SPANDREL)
BMP 2
4000 3500 3000 2500 2000 1500 1000 500 0
FPW
7.62-MM COAX
73-MM GUN
AT -3 (SAGGER)
BMP 1

CHAPTER 2

Organization of the Platoon and Squad

The platoon is the basic combat unit capable of maneuvering in the conduct of combat operations. The platoon can fight as part of a pure mechanized infantry company or as part of a company team, task organized with tank platoons and mechanized infantry platoons. In either case, the platoon can establish a base of fire and then move other elements to seek an advantageous position over the enemy from which to destroy or dislocate the enemy. The platoon is the lowest level at which tactics are employed. Squads, which seldom fight independently, execute drills.

On the battlefield, the platoon can expect rapid and frequent movement. It must be prepared to fight in a variety of situations — both mounted and dismounted — while attacking, defending, delaying, during movement, and under conditions where nuclear and chemical weapons have been used. The platoon operates in such a way as to make maximum use of the BFV's onboard weapons and of the dismount teams' firepower.

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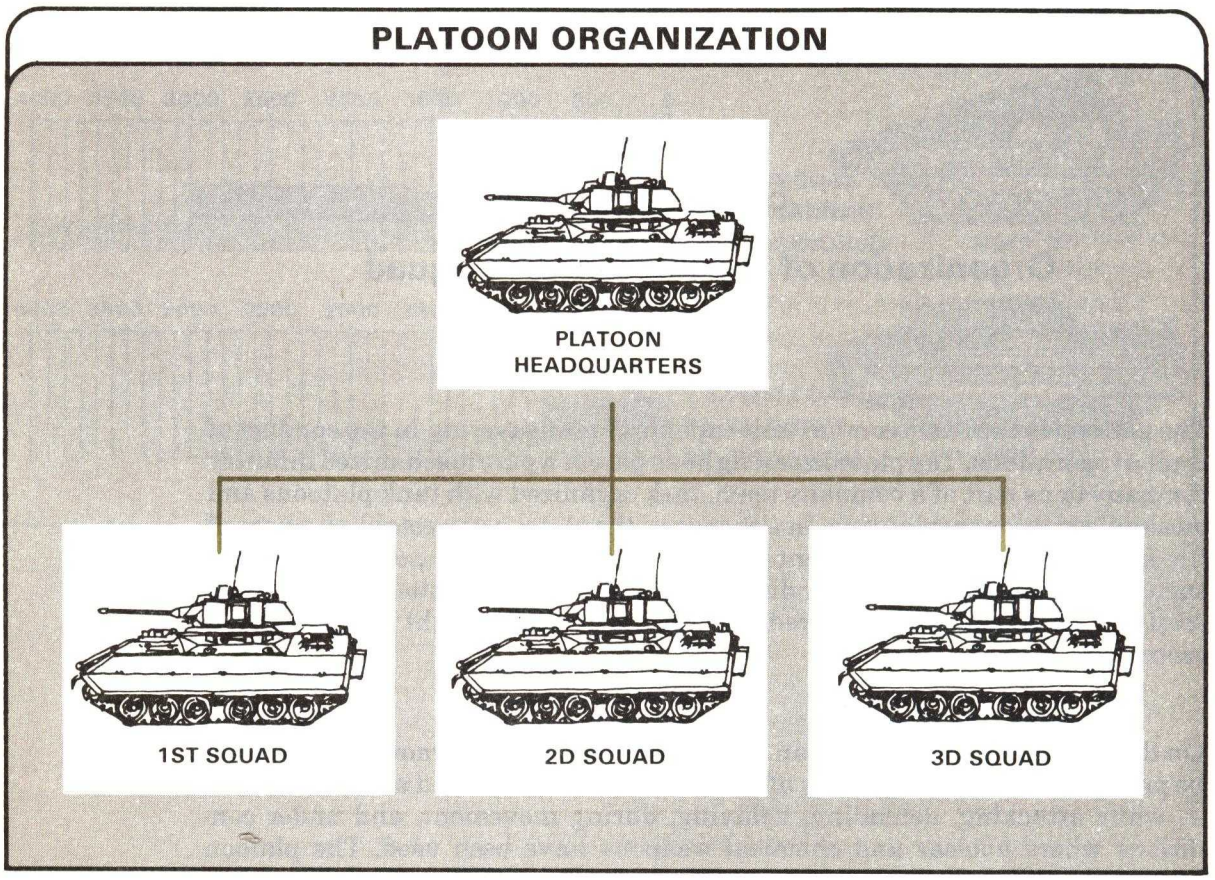
Section I. TOE Organization

The mechanized infantry platoon is equipped with four "BFVs." It is organized with a platoon headquarters and three Bradley squads. The platoon leader, his vehicle crew, RATELO, and attached personnel (FO, FO RATELO, and medic) are mounted in one BFV and the squads are mounted in the other three.



2-1. Platoon.

a. The platoon headquarters consists of five personnel and is augmented in combat by three additional personnel. The platoon sergeant is part of the platoon headquarters, but he rides in a squad BFV.

b. The platoon master gunner occupies the gunner's seat next to the platoon leader. The platoon master gunner becomes the Bradley

commander in the headquarters BFV when the platoon leader dismounts. His primary areas of responsibility are:

(1) Turret expertise.

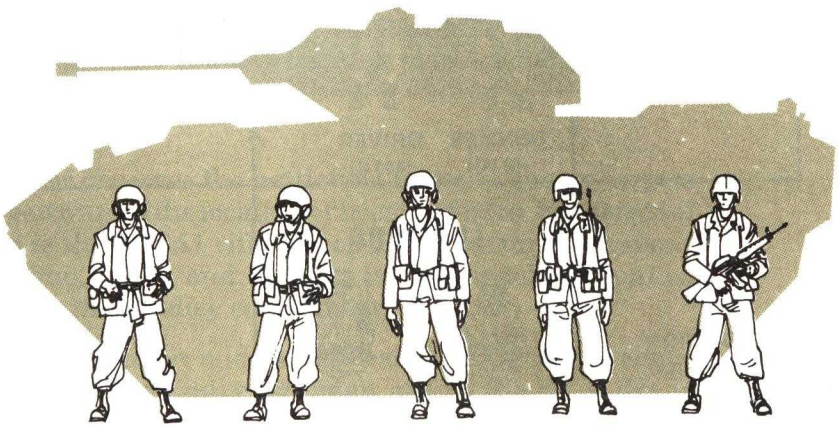
(2) Backup for platoon sergeant.

(3) Leader of one vehicle pair when platoon leader dismounts.

(4) Weapons system/gunnery trainer.

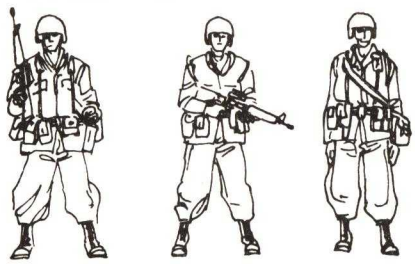
BRADLEY PLATOON HEADQUARTERS PERSONNEL

ASSIGNED



PLATOON LEADER (M16) | MASTER GUNNER (M16) | DRIVER (M16) | PLATOON SERGEANT (M16) | RATELO (M16)

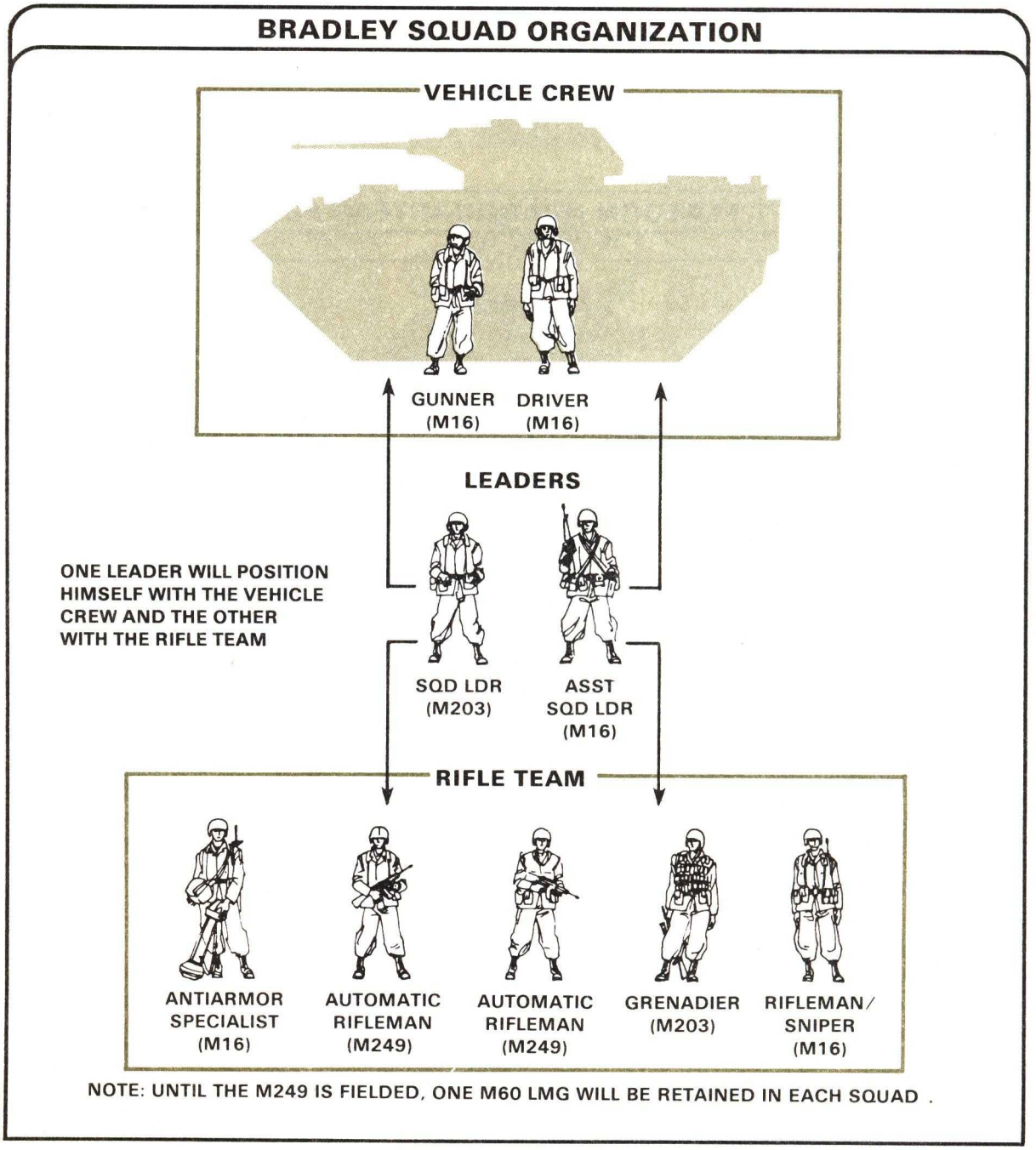
AUGMENTED FOR COMBAT



FO (M16) | FO RATELO (M16) | MEDIC (.45)

2-2. Squad.

The Bradley squad is composed of the BFV and nine men divided into a vehicle crew and a rifle team.


BRADLEY SQUAD ORGANIZATION
VEHICLE CREW
GUNNER (M16)
DRIVER (M16)
LEADERS
ONE LEADER WILL POSITION HIMSELF WITH THE VEHICLE CREW AND THE OTHER WITH THE RIFLE TEAM
SQD LDR (M203)
ASST SQD LDR (M16)
RIFLE TEAM
ANTIARMOR SPECIALIST (M16)
AUTOMATIC RIFLEMAN (M249)
AUTOMATIC RIFLEMAN (M249)
GRENADIER (M203)
RIFLEMAN/ SNIPER (M16)
NOTE: UNTIL THE M249 IS FIELDED, ONE M60 LMG WILL BE RETAINED IN EACH SQUAD .

2-3. Squad members' responsibilities.

Each squad member has certain responsibilities based on his duty position in the squad.

a. **Squad leader (Bradley commander).**

(1) The squad leader has overall responsibility for the squad. His personal weapon is the M203. While conducting mounted operations, he usually serves as the Bradley commander. He designates targets, selects routes of movement, selects vehicle positions, determines weapons to be fired, issues fire commands for all weapons, communicates with the platoon leader, and reacts to the platoon leader's/platoon sergeant's commands.

(2) The squad leader has primary responsibility for the maintenance of the BFV and the training of his squad.

b. **Gunner.**

(1) The gunner observes the battlefield to detect enemy targets and to be aware of the location of friendly forces. His personal weapon is the M16A1 rifle. He operates the turret weapons (25-mm gun, TOW, and 7.62-mm coaxial machine gun) as directed by the Bradley commander.

(2) He serves as gunner and, in rare cases, as fighting vehicle crew leader when only two men are in the BFV. He is responsible for operator maintenance of the turret and its weapons. The gunners for the platoon leader and platoon sergeant will frequently be required to assist in navigation and operation of radios.

c. **Driver.**

(1) The driver drives the vehicle under the Bradley commander's control. His personal weapon is the M16A1 rifle. He follows correct terrain-driving procedures and tries to select hull-down positions. He also aids in detecting targets and observing rounds fired. He assists in navigation by monitoring odometer readings.

(2) The driver is primarily responsible for operator maintenance on vehicle automotive systems. (Other squad members help the driver as directed by the squad leader.)

d. **Rifleman/sniper.** The rifleman/sniper's personal weapon is the M16A1 rifle.

e. **Antiarmor specialist.** The antiarmor specialist's personal weapon is the M16A1 rifle and he is also the designated gunner for the Dragon.

f. **Assistant squad leader.**

(1) The assistant squad leader assists the squad leader with squad operations, while mounted, by observing and controlling personnel in the troop compartment. If the squad leader dismounts, the assistant squad leader will occupy the squad leader's position and assume the duties of the Bradley commander.

(2) When the squad leader remains mounted and the rifle team dismounts, the assistant squad leader controls the rifle team. The assistant squad leader's personal weapon is the M16A1 rifle.

g. **Grenadier.** The grenadier's personal weapon is the M203 dual-purpose weapon.

h. **Automatic rifleman.** The Bradley squad has two automatic riflemen. The automatic rifleman's personal weapon is the M249 SAW. Until the M249 is fielded in mechanized units, the automatic rifleman will continue to carry the M16 and also man the M60 LMG. They assist the antiarmor specialist, when required, by carrying an extra Dragon missile or the nightsight tracker.

2-4. Backup vehicle crew positions

The requirement for Bradley units to conduct continuous operations puts special stress on the vehicle crew. The driver, gunner, and Bradley commander must have backup personnel assigned and trained as an alternate crew so operations of the vehicle will not suffer because of fatigue often associated with these critical positions. Some units may even choose to designate and train a third crew to give additional depth to the squad.

Section II. Organization When Mounted

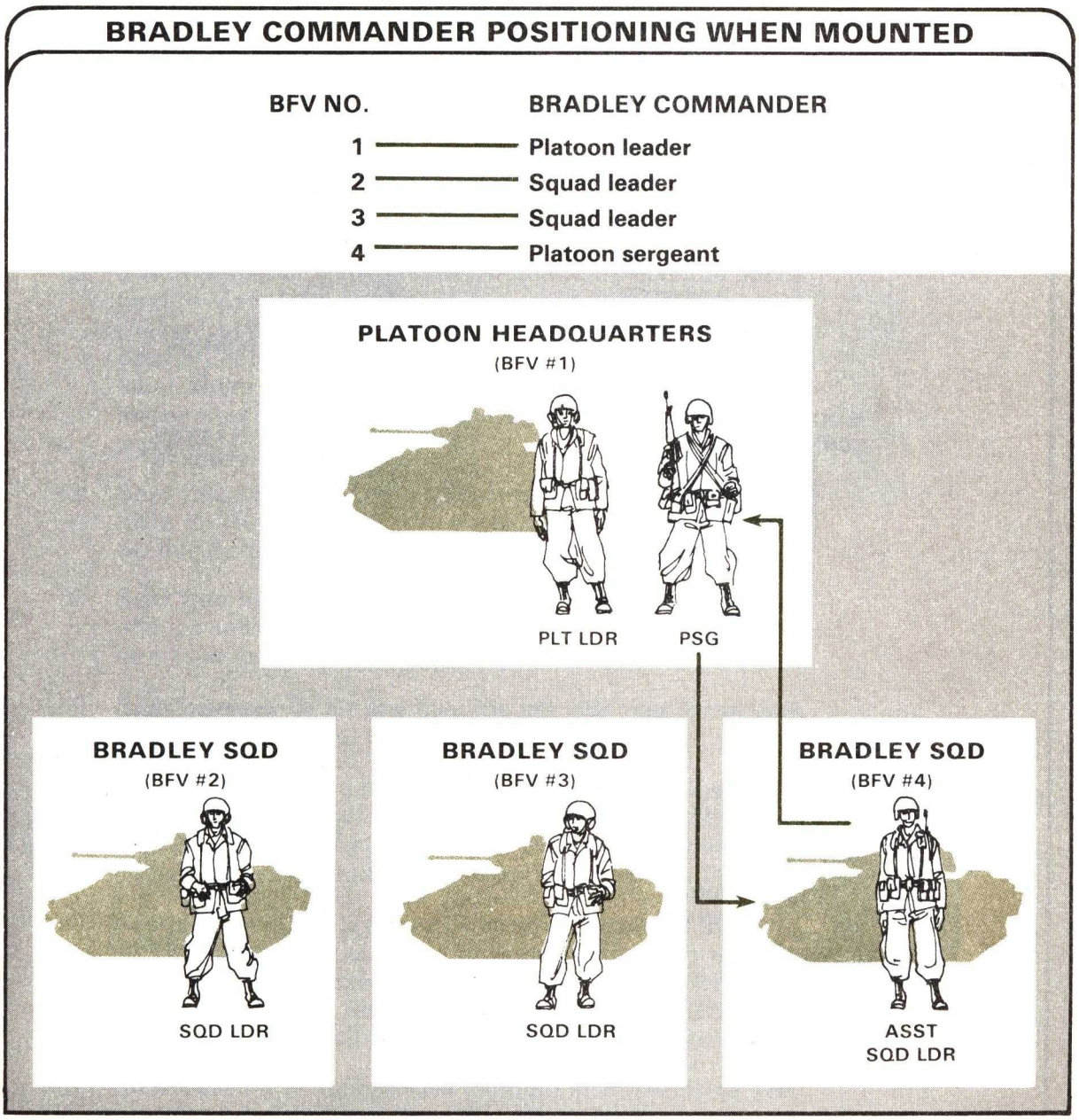
When the Bradley platoon organizes for combat, there is a realignment of leaders to facilitate command and control functions and to accommodate the eventual requirement to dismount.

2-5. Realignment.

a. Key leaders are positioned to make sure that the critical Bradley commander positions are filled with experienced and trained

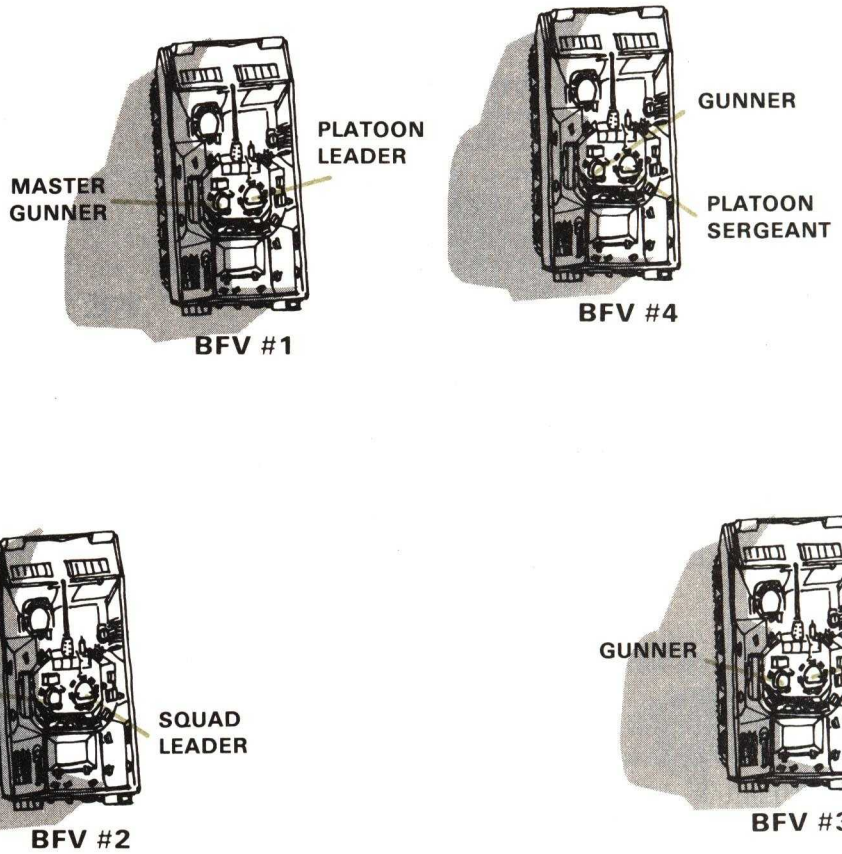
personnel. BFVs are numbered using the same system as a tank platoon.

b. The assistant squad leader from BFV No. 4 moves to BFV No. 1 so he can move into the gunner's position when the platoon leader dismounts and the master gunner moves to the Bradley commander's position.



c. The platoon moves and fights mounted whenever possible. When all of the platoon remains mounted, it fights as a single force under the control of the platoon leader. At times, when mounted, the platoon leader may choose to organize the platoon into pairs. The platoon sergeant will control one pair (BFVs No. 3 and 4) while the platoon leader controls the other (BFVs No. 1 and 2); however, the platoon leader retains overall control of the platoon.

CONTROLLING MOUNTED OPERATIONS



2-6. The mounted squad.

a. When riding in the BFV, vehicle crew members operate the vehicle. Rifle team members occupy the troop compartment, aid the crew in reloading of ammunition, man the firing port weapons, provide security, and remain oriented by observing through the vision blocks.

b. The responsibilities and seating for the nine personnel in the Bradley squad (see graphic on page 2-10) are as follows:

(1) **Seat number 1, Bradley commander.** He controls the vehicle and all personnel on board. He designates targets, selects routes of movement, selects vehicle positions at the halt, and communicates with and reacts to platoon leader's/ platoon sergeant's commands.

(2) **Seat number 2, gunner.** He is the primary operator of the turret weapons. He detects targets, assists in navigation and the operation of radios, responds to the direction of the Bradley commander, and serves as Bradley commander when there are only two personnel in the vehicle. He is responsible for operator maintenance of the turret and its weapons.

(3) **Seat number 3, driver.** He drives and maintains the vehicle. He responds to the directions of the Bradley commander during movement.

(4) **Seat number 4.** He operates the left side front firing port weapon and observes to the left side of the vehicle. Normally, he acts as assistant driver.

(5) **Seat number 5.** He operates the left side rear firing port weapon and observes to the left side of the vehicle.

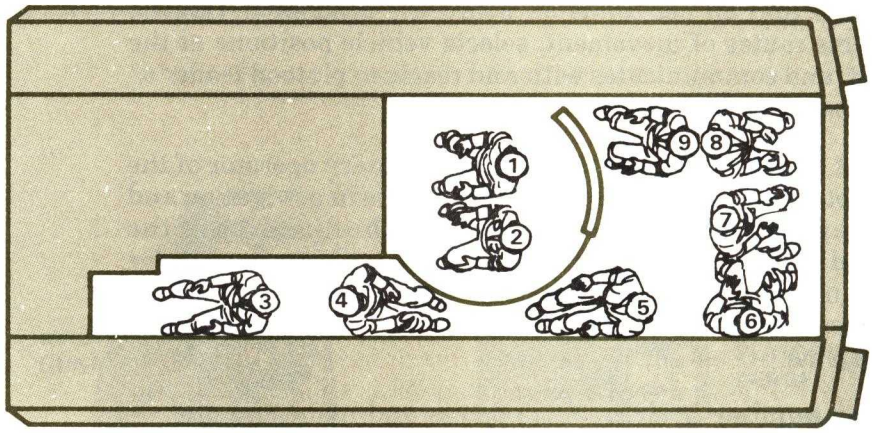
(6) **Seat number 6.** He operates the ramp firing port weapon (left side) and observes to the rear. Before the ramp is lowered, he removes his firing port weapon from the ball mount. He may help the soldier in seat number 7 to reload the TOW.

(7) **Seat number 7.** It is normally occupied by one of the automatic riflemen. He operates the ramp firing port weapon (right side) and observes to the rear of the vehicle. Before the ramp is lowered, he removes his firing port weapon from its ball mount. He reloads the TOW launcher when directed.

(8) **Seat number 8.** He operates the right side rear firing port weapon and observes to the right of the vehicle.

(9) **Seat number 9.** It is normally occupied by the assistant squad leader. He operates the right side front firing port weapons and observes to the right side of the vehicle. He aids the crew in the reloading of 25-mm and 7.62-mm ammunition.

BFV SQUAD SEATING AND RESPONSIBILITIES



1 BRADLEY COMMANDER
2 GUNNER
3 DRIVER

SEAT NUMBERS 4 - 9 OBSERVE AND OPERATE FPWs

2.7. Understrength platoons and squads.

a. Platoons and squads usually will not be at full strength. Even so, the mission (in combat and in training) can still be accomplished if understrength units are organized with these rules in mind:

(1) Keep key leadership positions filled. Always maintain a chain of command — platoon leader, platoon sergeant, squad leaders and assistant squad leaders.

(2) Man the most potent weapons first. Take full advantage of available firepower. Before each mission carefully consider how to employ Dragons and automatic rifles. In most situations, the BFV onboard weapons are the most potent weapons (25-mm gun, TOW missiles, and 7.62-mm coaxial machine gun).

(3) Squad and platoon headquarters members must be cross-trained so that more than one man in each squad is capable of acting as gunner, driver, and vehicle commander. This type of in-depth training pays off when personnel turbulence is high and units are understrength.

b. The platoon must have an organization plan for use when it does not have all four fighting vehicles. Since two full-strength squads cannot ride on one BFV, cross-loading of men and equipment from a disabled fighting vehicle must be accomplished among all of the platoon's remaining fighting vehicles. Normally, the squad leader of the disabled BFV rides with the platoon leader. This arrangement has two advantages: the squad leader can follow the operation, and he can get orders from the platoon leader. The platoon leader's fighting vehicle also serves as the point on which the squad members assemble if the rifle teams dismount from the BFVs. Depending on the location and condition of a disabled vehicle, as well as the tactical situation,the platoon leader may choose to leave the driver and gunner with the vehicle to secure it and oversee its recovery and repair.

Section III. Organization When Dismounted

The platoon leader must organize his platoon for mounted combat and for the immediate action dismount situation that often arises while fighting on the move. When the tactical situation requires the platoon leader to dismount his platoon and fight the infantry in relation to his BFVs, the platoon must have a command and control system organized in advance. It will take effect when the platoon leader orders, "Platoon, dismount." The BFVs must have complete crews in the Bradleys in order to have them provide the base of fire and fight on the move. The platoon must dismount sufficient leadership to lead the dismounted element. In most cases, the overall command of the platoon and the location of the platoon leader will be with the dismounted element because the dismount action becomes critical. The platoon sergeant locates with the moving element and controls it as

well as the base-of-fire element. These tactical considerations and command techniques will be discussed in this section. The examples provide the general case solution and are workable under the conditions described.

2-8. Elements.

The ability of the platoon's three rifle teams to fight separately from, but in relation to, the four BFVs offers the platoon leader numerous employment options. Because the BFV can fight effectively in its own right, when the rifle teams dismount, the platoon is able to divide into two separate fighting elements. The three rifle teams are organized into a dismount element and the four BFVs are organized into a fighting vehicle element. Generally, the platoon leader controls the dismount element and the platoon sergeant controls the fighting vehicle element. The platoon leader may designate which rifle team will carry the Dragon.

2-9. Leadership positioning.

a. The determination as to which leaders dismount is critical. In the case of a deliberate dismount, one in which ample time has been provided for planning and METT-T analysis, the platoon leader positions his leaders to best meet the situation.

b. In the case of a hasty dismount, a common situation on the mechanized battlefield, the platoon leader will not have time to carefully analyze all of the factors of METT-T. Since speed of reaction is critical, drills must replace the METT-T analysis if the momentum of the fight is to be maintained. In this situation, the following leaders dismount:

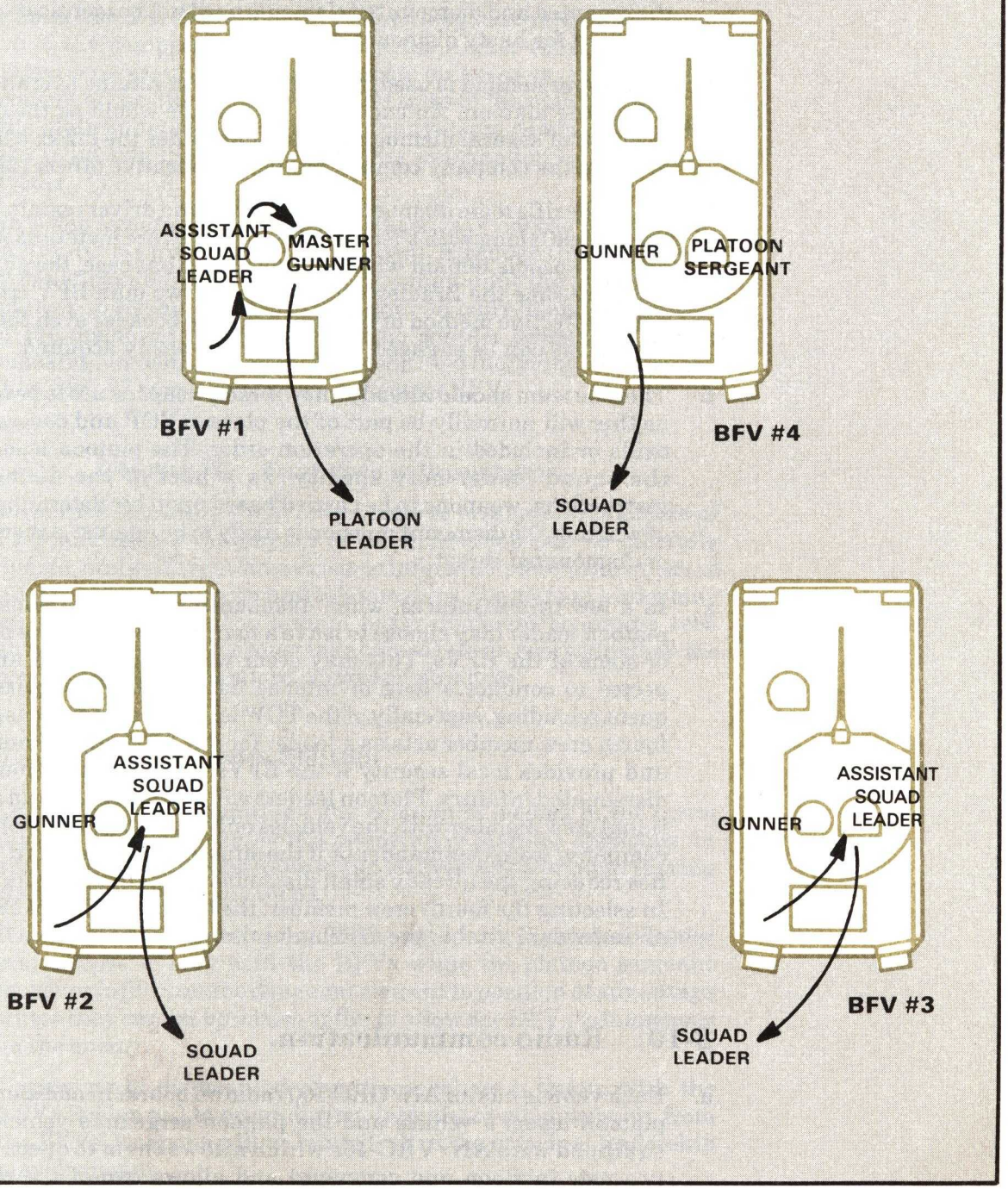
   (1) BFV 1 — Platoon leader. (Bradley commander's place is taken by the master gunner. The master gunner's position is taken by the assistant squad leader from BFV No. 4 riding in BFV No. 1).

   (2) BFV 2 — Squad leader. (Assistant squad leader moves into Bradley commander's position).

   (3) BFV 3 — Squad leader. (Assistant squad leader moves into Bradley commander's position).

   (4) BFV 4 — Squad Leader. (Platoon sergeant remains mounted).

HASTY DISMOUNT LEADERSHIP POSITIONING



c. In a more deliberate situation, where time is available for an estimate based on the factors of METT-T, the platoon leader may organize his unit as he deems appropriate. Leaders may be positioned as fit the particular situation and the organization of the mounted and dismounted elements need not be identical to the standard for hasty dismount drills.

d. Whichever method is used, the platoon leader retains overall control of the platoon. An exception to this rule would be the organization of several dismounted platoons under the direct control of either the company commander or his executive officer (2IC).

e. When the rifle team dismounts, the gunner and driver remain with the vehicle, along with a leader. There may be rare instances when only two people remain with the vehicle; in that case, the gunner would become the Bradley commander. A two-man BFV crew is not an effective method of fighting the BFV because even though the targets can be engaged, they cannot be easily acquired.

f. The rifle team should already know which weapons are to be taken as this will normally be part of the platoon SOP and covered by drills or included in the operation order. The platoon leader or the squad leader may specify, as a part of the dismount instructions, weapons to be carried based upon his determination of whether the dismount mission is likely to be against a mounted or dismounted threat.

g. In a few rare instances, when dismounting the rifle teams, the platoon leader may choose to leave a fourth crew member with all or some of the BFVs. This may occur when the vehicles are expected to conduct a long or intense fight that will require frequent reloading, especially of the TOW launchers. In this case, the fourth crew member acts as a loader for the TOW and 25-mm gun and provides local security if the BFVs are separated from the dismounted infantry. Platoon leaders will normally leave an additional crew member with the vehicles only on instruction from the company/team commander or if the situation is such that it justifies reducing the already small dismount strength of the platoon. In selecting the fourth crew member, the leader should not choose an individual vital to the dismount mission.

2-10. Radio communication.

a. Each vehicle has an AN/GRC-160 radio on board. In addition, the platoon leader's vehicle and the platoon sergeant's vehicle are equipped with AN/VRC-46s which allows them to operate on two nets (platoon and company) and allows two of the radios

(AN/GRC-160) to be dismounted in the AN/PRC-77 backpack configuration.

b. When the platoon dismounts, the platoon leader will normally take the AN/PRC-77 from his BFV (carried by the RATELO). This allows him to talk to either the platoon sergeant on the platoon net or to the company commander on the higher echelon net. The platoon sergeant continues to operate on two nets. He maintains control of the other three BFVs and talks to the platoon leader on the platoon net as well as the company/team commander on his net to receive instructions and pass information to the platoon leader.

c. In some situations, the platoon leader may choose to take both AN/PRC-77s with him on the dismount. Although this gives him a two-net capability on the ground, it may limit the ability of the platoon to remain in contact with the company/team commander if the dismount element loses radio contact because of terrain masking. In addition, there is no dedicated individual to carry the AN/PRC-77 from the platoon sergeant's BFV.

Section IV. Exceptions to Organization

In deliberate situations where the time to analyze the factors of METT-T and assess the impact of reorganization can be carefully considered, and sufficient time exists to inform all platoon members of a temporary change in command relationships, the platoon leader may choose to deviate from the normal hasty dismount command relationship. In these cases, he must take care to inform everyone when the platoon reverts to the standard command structure.

2-11. Offensive operations.

a. During mounted operations, the position of leaders in the turret may be adjusted to support a deliberately planned dismount. In such an operation, assistant squad leaders may dismount leaving the squad leader in the turret.

b. If a mounted maneuver using BFVs is planned, the platoon leader may choose to stay with the BFVs while the platoon sergeant moves or infiltrates the dismount element to position of advantage where they can set up a base of fire to allow the BFVs to maneuver on the enemy.

c. During night dismounted operations, where a linkup with the BFVs is planned to occur during daylight or when support from the BFVs' weapons will be limited, all of the principal leadership may dismount.

d. In other operations where the higher commander's intent dictate rapid mounted movement, even though risk is incurred, the pla toon leader may choose to dismount only small security team with minimal leadership and attempt to bypass any resistance.

2-12. Defensive operations.

a. Generally, more opportunities for deliberate actions will b available to a leader during the defense and therefore mounted o dismounted organization may be adjusted more often.

b. Since defensive operations involve dismounted operations tha are usually position-oriented, the maneuver element in the defens is more likely to be the BFV element. When this is the case, th platoon leader may choose to stay with the BFVs and directl control the vehicle fight, leaving the platoon sergeant to contro the dismounted infantry.

c. In addition, selected BFV's may be organized with an additiona crew member if a heavy vehicle fight forward is planned.

CHAPTER 3

Leading the Platoon

This chapter discusses troop-leading procedures, combat orders, preparing to fight, leading in combat, and standing operating procedures (SOP) as they pertain to all combat operations. Application of these procedures requires time: the more time, the greater the leader's ability to plan and prepare in depth; the less time, the more reliance the leader must place on SOPs and drills. Leaders must use the procedures outlined, if only in abbreviated form, to make sure their soldiers understand the mission and prepare for its accomplishment.

Section I. Troop-Leading Procedures

Troop leading is the process a leader uses to prepare his unit to accomplish a tactical mission. It begins when he is alerted for a mission, usually by a warning order. It starts all over again when he gets a different mission — it never ends.

3-1. Process.

There are eight steps in the troop-leading process (discussed below). Steps 3 through 8 may not follow a rigid sequence, and will often be accomplished CONCURRENTLY. In combat, rarely will time be available to go through each step in detail. However, a good leader

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habitually checks them off in his mind so that he is sure nothing is forgotten.

a. **Step 1 — Receive the Mission.** A mission may be received in a warning order, an operation order (OPORD), or a fragmentary order (FRAGO).

(1) As soon as the leader has the order, he analyzes it to prepare his own warning order taking into account the following:

(a) What is the MISSION?

- Specified tasks (attack, defend, delay, etc.).
- Implied tasks (move to assembly area, conduct passage, cross river, etc.).

(b) What is known about the ENEMY?

(c) How will the TERRAIN affect the operation (quick map reconnaissance)?

(d) What TROOPS are available?

(e) How much TIME is available?

(f) What SUPPLIES and EQUIPMENT are needed?

(g) What SPECIAL TASKS need to be assigned?

(2) The leader now plans the use of time available and prepares for the upcoming mission. The platoon leader should use no more than one-third of the available time, leaving the rest for squad preparation. The unit must be told when to be ready and the things that must be done beforehand. The leader works backward from the time he wants the men to be ready, allowing enough time for each task. Below is an example of a squad leader's reverse planning.

(a) 1420: Ready time.

(b) 1415: Check assembly area. (Make sure all Claymores are recovered and that no ammunition, etc., is left behind.)

(c) 1300: Inspect squad/rehearse.

(d) 1205: Issue order to squad.

(e) 1200: Complete squad order.

(f) 1105: Reconnoiter with platoon leader/receive order.

(g) 1050: Issue warning order to squad.

b. **Step 2 — Issue a warning order.** Initial instructions are usually in a warning order. In it, the leader gives enough information to

his unit to start preparing for the operation. The platoon leader issues his unit warning order to the platoon sergeant, squad leaders, and forward observer. The squad leader, in turn, issues a warning order to his squad.

(1) Unit SOPs should prescribe actions to take when a warning order is received; for example, drawing ammunition, rations, water, and communications gear.

(2) The warning order should state as a minimum:

(a) The mission or probable mission (nature of the operation).

(b) Who is participating in the operation.

(c) Critical times (movement, LD, etc.).

(d) Orders for preliminary actions (reconnaissance, surveillance, and observation).

(e) Time and place for issuance of the complete order.

(f) Administrative instructions (equipment, supplies).

c. **Step 3 — Make a tentative plan.** Based on MISSION, ENEMY, TERRAIN, TROOPS, and TIME AVAILABLE, the leader analyzes courses of action that would possibly accomplish the mission and selects the best as his tentative plan. During this analysis, the leader takes into account the following:

(1) What is the platoon's MISSION? (We must attack to seize that objective; or, We must prepare to defend this position by 0400.)

(2) What ENEMY troops oppose us? What size units and where are they? What weapons, artillery, or engineer units do they have in support? Will they be mounted, dismounted, or both?

(3) How can we use the TERRAIN to our advantage? To answer this question, the leader examines the observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach (OCOKA). He may use a detailed map or preferably, ground reconnaissance.

(a) Observation and fields of fire influence decisions made on placement of BFVs, teams, and Dragons. In the offense, the fire element must be where it can support the moving element. In the defense, personnel must have observation; weapons must have fields of fire covering avenues of approach. The platoon leader also considers the enemy's point of view as to observation and fields of fire.

(b) Cover and concealment influence the choice of routes, positions, and targets. Terrain is used to provide cover from enemy fires and to shield friendly elements from enemy observation.

(c) Obstacles also influence the choice of routes, positions, and targets. In the defense, obstacles are used in conjunction with the terrain to canalize the enemy into kill zones. Obstacles are also used to impede and restrict movement to the platoon flanks or other areas.

(d) Key terrain is any terrain that affords a marked advantage to the force that seizes or retains it. Key terrain has a bearing on decisions regarding the selection of objectives and routes in offense, and on the choice of positions in defense.

(e) An avenue of approach is an air or ground route that leads an attacking force to its objective or to key terrain in its path. Avenues of approach are considered with all other factors. They influence the choice of routes and the direction of attack in the offense; and the assignment of positions, sectors of fire, and targets in the defense. Enemy avenues of approach or withdrawal are viewed as to how they can affect the platoon's operation.

(4) How many TROOPS are available and how do they affect the number of positions, routes, formations, and the fire plan? How many troops are available to occupy a specific area or attack an objective. Are there any attachments to the squad or platoon that must be included in the plan?

(5) How much TIME is there to develop courses of action, decide on a tentative plan, and prepare for the operation. What actions must be delegated if they are to be completed in time.

(6) The leader considers each of the factors and compares alternatives. From this analysis, he draws conclusions that allow him to select the best course of action, which becomes the basis of coordinate, reconnoiter, organize, and move.

d. **Step 4 — Start necessary movement.** During the accomplishment of steps 3 through 8, the platoon leader may be forward completing his plan. If there is a distance between the platoon and where the mission must be started, the platoon sergeant may bring the platoon forward to save time. Such movement may be accomplished

under company control, with the company executive officer (2IC) or first sergeant in charge. This particular step may be omitted, occur in a different sequence, or be done concurrenty with some other step(s).

e. **Step 5 — Reconnoiter.** To make the best use of men and weapons, the leader must evaluate the terrain on which he will fight. This evaluation may be done using the key elements in OCOKA described in step 3. If time is short, the leader, at least, makes a map reconnaissance, which may confirm or cause him to modify his tentative plan.

f. **Step 6 — Complete the plan.** Based on the reconnaissance, the leader completes his tentative plan. If his tentative plan requires adjustment because of new or more accurate information about the enemy or terrain, he makes the adjustments. In a defense, he decides where to put his weapons and how to tie the defense together. In an attack, he decides how to move and how to seize the objective. In all types of operations, he decides how best to support his plan with indirect fires.

g. **Step 7 — Issue the complete order.** Platoon and squad orders are issued orally. For an attack, the platoon leader should give his order from a point where the squad leaders can see the objective. For a defense, he should give the order on the ground his troops will defend. When this is not feasible, the platoon leader should use a terrain model for his squad leaders to look at while he gives the order. Like the platoon leader, a squad leader can often give his orders for the defense while his squad is at the defensive position area. Leaders must be sure all their men know the plan of action.

h. **Step 8 — Supervise.** After the order is issued, leaders direct the preparations to be sure the order is properly carried out. He conducts rehearsals, enforces rest, and spot checks his men to make sure they understand his plan.

3-2. Rehearsals.

If there is available time before an operation, platoon leaders should have squads rehearse combat tasks. This fosters confidence and improves performance. It may also reveal any weaknesses in the plan. If possible, rehearsals should be on terrain resembling that on which

the unit will fight and under the expected light conditions. Some important tasks to rehearse are:

- Fire and movement.
- Actions upon unexpected enemy contact.
- Actions at the assault position.
- Actions in the assault.
- Breaching a minefield.
- Assaulting a trench.
- Breaching wire obstacles.
- Assaulting a bunker or a building.
- Using special weapons or demolitions.

3-3. Inspections.

a. The last thing done before an operation is to inspect the men and equipment for readiness. This may include:

(1) The BFV.

(2) Rations.

(3) Water.

(4) Weapons.

(5) Ammunition.

(6) Individual uniform and equipment.

(7) Camouflage.

(8) Mission-essential equipment (demolitions, starlight scopes, radios, CEOIs).

(9) Knowledge of the mission and responsibilities.

b. Once the operation has begun, the leader must see that the plan is followed. He should be ready to change his plan if that is what the situation demands.

3-4. Leading in combat.

a. The primary duty of the leader is mission accomplishment. Leadership is the art of influencing and directing men in such a way as to obtain their confidence, respect, obedience, and

cooperation in preparing for and executing combat operations and accomplishing the mission. Leadership is based on knowledge of men, equipment, and tactics. The leader is responsible for the discipline, training, welfare, and morale of his men. He must be technically competent in the use of all infantry equipment, and tactically proficient in equipment employment. At platoon and squad level, leadership by example is the key. The leader must:

(1) Set a positive example.

(2) Lead from where he can control all elements physically or by radio.

(3) Move to critical locations to influence the action when necessary.

(4) Make sound but quick decisions.

(5) Execute decisions forcefully.

b. The battlefield is a stressful and fatiguing environment. The first days of battle can be particularly trying as leaders and soldiers adapt to the reality of fighting. The platoon and squad must be prepared to fight 24 hours a day. Leaders must make every effort to minimize the effects of stress and fatigue. Soldiers who are well-trained and confident will react better under conditions that produce stress and fatigue. SOPs that are mastered help men and units to endure. Sleep and rest are critical aspects of maintaining individual and unit proficiency and must be encouraged during lulls in battle. Rest must be accomplished without standing down the platoon.

(1) **Sleep/rest management.** Leaders begin episodes of rest (catnaps or longer) before fatigue becomes debilitating. They should not go longer than 24 hours without sleep, but more important, they should recognize signs of fatigue.

(a) Soldiers should rest or sleep at every opportunity while a buddy remains awake. In tasks requiring attention (surveillance, communication), personnel are rotated.

(b) If possible, after prolonged periods of minimal rest/sleep (2 to 4 days), a long period of uninterrupted sleep (12 to 24 hours) is needed. If awakened ahead of time, a period of reduced responsiveness can be expected.

(2) **Special leadership considerations.** If signs of "combat fatigue" appear (following a prolonged period with minimal rest/sleep), then allow uninterrupted sleep if possible.

(a) To lessen mental and physical fatigue, spread the most difficult and dangerous assignments around.

(b) During normal and sustained operations, esprit de corps will be important in counteracting the negative effects of sustained battle.

c. Communication with the platoon will often be lost in combat. Therefore, leaders must have a plan to maintain control of the unit. The following methods of control can be used in the absence of communication:

(1) Designation of a base squad for dismounted operations on which other squads can guide.

(2) Use of the wingman concept for mounted operations.

(3) Execution matrix.

(4) Predesignated pyrotechnics, flags, and other visual signals.

Section II. Combat Orders

Combat orders are written or oral. Leaders use them to transmit information and instructions to subordinates. The use of combat orders, expressed in standard formats or containing essential elements, ensures that a leader conveys his instructions clearly, concisely, and completely. The detail of an order varies with the amount of time a leader has to prepare it. Standing operating procedures complement combat orders. They allow the leader to refer to them rather than issue the same instructions for tasks and situations that occur often.

3-5. Warning order.

Leaders use warning orders to alert subordinate units of an impending mission and to provide initial instructions so that subordinates have a maximum amount of time to prepare for its execution.

a. Although there is no prescribed format, a warning order contains five essential elements:

(1) The mission.

(2) Who is participating in the operation.

(3) Time of the operation.

(4) Any special instructions.

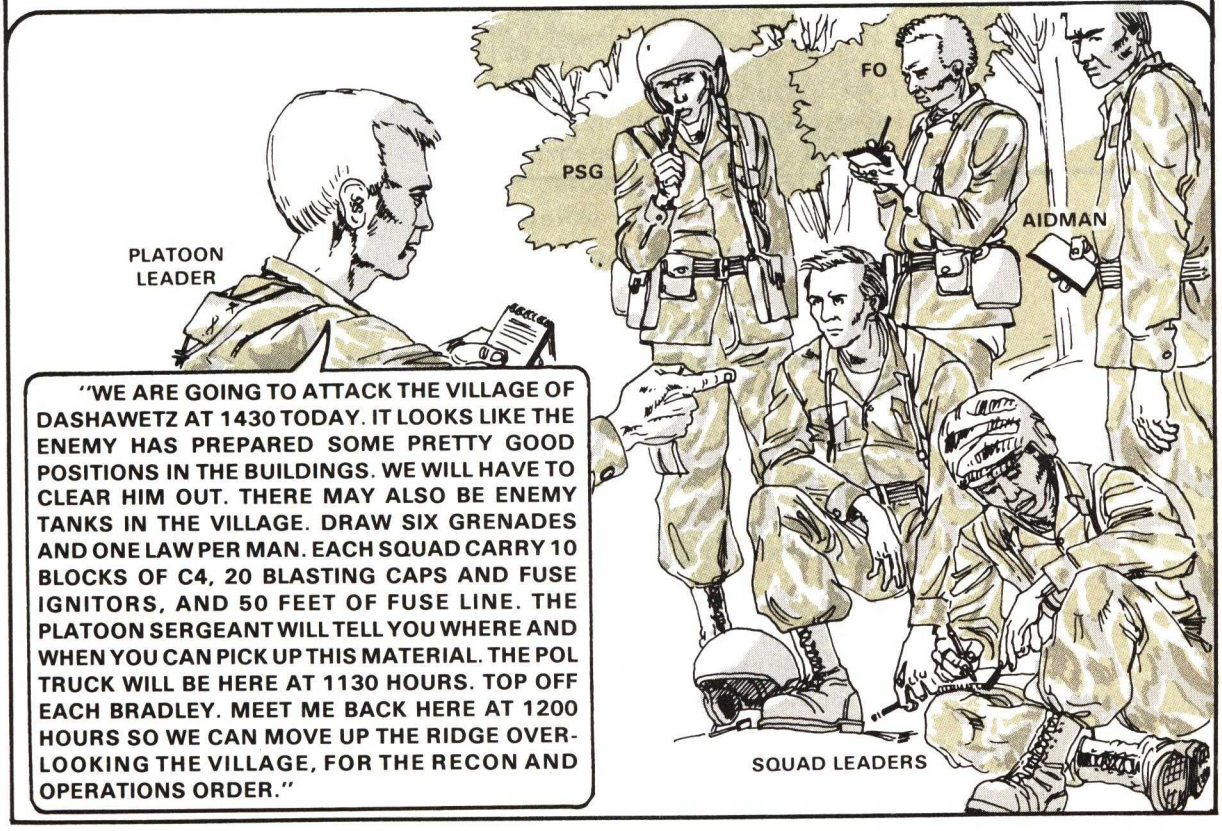
(5) Time and place for issuance of the complete order.

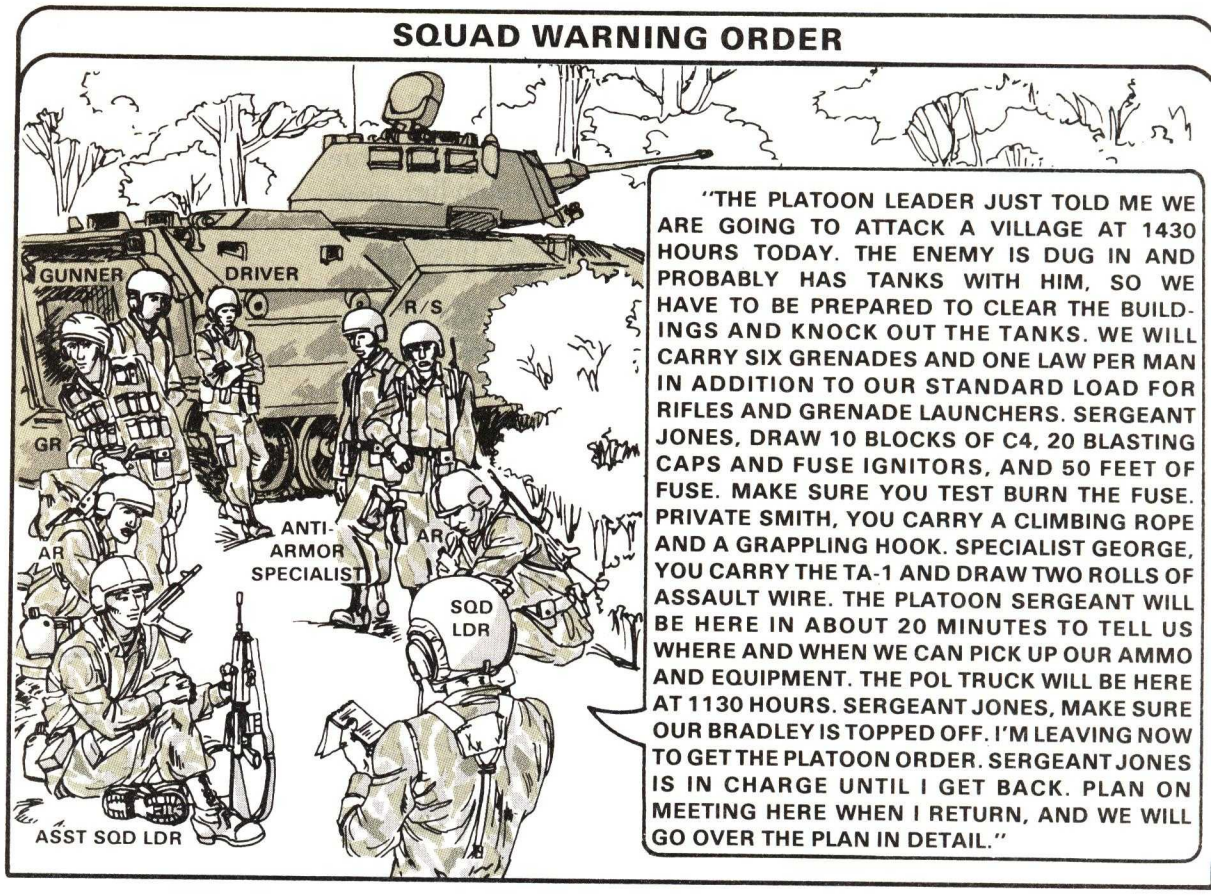
b. In addition to these essentials, the leader should also issue necessary administration instructions (equipment, supplies, meal and fueling schedule) as well as specific instructions not covered by SOP that are important to the preparation for the mission.

c. The platoon leader may issue the warning order to his platoon sergeant, forward observer, aidman, and squad leaders, or only to the platoon sergeant if time does not permit the gathering of others.

d. The squad leader normally issues the warning order to all squad members. Preparation for the operation begins immediately based on special instructions and the platoon SOP. The platoon sergeant keeps close watch on the preparations made by the men. He ensures that the instructions of the platoon leader are carried out.

PLATOON WARNING ORDER


FO
PSG
AIDMAN
PLATOON LEADER
"WE ARE GOING TO ATTACK THE VILLAGE OF DASHAWETZ AT 1430 TODAY. IT LOOKS LIKE THE ENEMY HAS PREPARED SOME PRETTY GOOD POSITIONS IN THE BUILDINGS. WE WILL HAVE TO CLEAR HIM OUT. THERE MAY ALSO BE ENEMY TANKS IN THE VILLAGE. DRAW SIX GRENADES AND ONE LAW PER MAN. EACH SQUAD CARRY 10 BLOCKS OF C4, 20 BLASTING CAPS AND FUSE IGNITORS, AND 50 FEET OF FUSE LINE. THE PLATOON SERGEANT WILL TELL YOU WHERE AND WHEN YOU CAN PICK UP THIS MATERIAL. THE POL TRUCK WILL BE HERE AT 1130 HOURS. TOP OFF EACH BRADLEY. MEET ME BACK HERE AT 1200 HOURS SO WE CAN MOVE UP THE RIDGE OVERLOOKING THE VILLAGE, FOR THE RECON AND OPERATIONS ORDER."
SQUAD LEADERS


SQUAD WARNING ORDER
GUNNER
DRIVER
R/S
GR
AR
ANTI-
ARMOR
SPECIALIST
AR
SQD
LDR
ASST SQD LDR
"THE PLATOON LEADER JUST TOLD ME WE ARE GOING TO ATTACK A VILLAGE AT 1430 HOURS TODAY. THE ENEMY IS DUG IN AND PROBABLY HAS TANKS WITH HIM, SO WE HAVE TO BE PREPARED TO CLEAR THE BUILDINGS AND KNOCK OUT THE TANKS. WE WILL CARRY SIX GRENADES AND ONE LAW PER MAN IN ADDITION TO OUR STANDARD LOAD FOR RIFLES AND GRENADE LAUNCHERS. SERGEANT JONES, DRAW 10 BLOCKS OF C4, 20 BLASTING CAPS AND FUSE IGNITORS, AND 50 FEET OF FUSE. MAKE SURE YOU TEST BURN THE FUSE. PRIVATE SMITH, YOU CARRY A CLIMBING ROPE AND A GRAPPLING HOOK. SPECIALIST GEORGE, YOU CARRY THE TA-1 AND DRAW TWO ROLLS OF ASSAULT WIRE. THE PLATOON SERGEANT WILL BE HERE IN ABOUT 20 MINUTES TO TELL US WHERE AND WHEN WE CAN PICK UP OUR AMMO AND EQUIPMENT. THE POL TRUCK WILL BE HERE AT 1130 HOURS. SERGEANT JONES, MAKE SURE OUR BRADLEY IS TOPPED OFF. I'M LEAVING NOW TO GET THE PLATOON ORDER. SERGEANT JONES IS IN CHARGE UNTIL I GET BACK. PLAN ON MEETING HERE WHEN I RETURN, AND WE WILL GO OVER THE PLAN IN DETAIL."

3-6. Operation order.

The OPORD supplies needed information and instructions to subordinates. It outlines what must be done to accomplish a specific mission through coordinated effort. The leader uses the order to tell his subordinates how he intends to fight the battle. It ensures that the platoon and squad know everything necessary to accomplish the mission. Consistent use of a standard format allows the leader to refine SOPs and streamline his orders. The standard OPORD format is used by leaders to organize their thoughts in a logical sequence.

a. **Situation.** Paragraph one has three subparagraphs: enemy forces, friendly forces, and attachments and detachments. Paragraph one also gives an overview of the general situation so subordinate leaders or individuals can gain an understanding of the area of operations. This paragraph provides information only and contains no orders. It also includes terrain and weather information.

(1) **Enemy forces.** The leader should extract information from the higher level situation paragraph of the OPORD that pertains to his mission, rather than simply "parrot" what is there. He should include:

(a) Known or estimated enemy strength.

(b) Known or estimated enemy locations.

(c) Actions or activities of the enemy that may affect the platoon mission.

(2) **Friendly forces.** Information here contains the verbatim mission statement of the next higher headquarters, and adjacent, supporting, and reinforcing units listed in the following order:

(a) Higher unit. (The mission and intent of the company and next higher unit.)

(b) Adjacent units. (Listed in order, left, right, front, and rear.)

(c) Supporting mortar or field artillery units.

(3) **Attachments and detachments.** List the availability and the time these attachments and detachments are effective.

b. **Mission.** Paragraph two of the OPORD gives the mission in a clear, concise statement of the tasks to be accomplished. It contains the WHO (unit), WHAT (attack, defend, delay, etc.), WHEN (date-time group), WHY (prevent penetration of positions), and WHERE (generally, grid coordinates).

c. **Execution.** Paragraph three of the OPORD is the execution paragraph. It contains the "HOW TO" information needed to accomplish the mission. It will have the concept of operation, mission for subordinate units, and coordinating instructions.

(1) **Concept of operation.** This information states briefly the leader's intent and tactical plan. It describes the scheme of maneuver and plan of fire support. Although brief, it must be detailed enough to ensure correct action, and avoid language that might confuse subordinates. The concept of operation may be broken down into two subparagraphs:

(a) **Scheme of maneuver.** This includes platoon mission, movement technique, direction, order of march, primary mission for each squad, and position in company order of march.

(b) **Fire support.** This includes preparation fires/final protective fires (FPF) and priority fires.

(2) **Missions for subordinate units.** Only units organic or attached are listed. Details of specific missions for squads, vehicle crews, teams, or individuals are discussed.

(3) **Coordinating instructions.** These are in the last subparagraph of paragraph three of the OPORD. It lists tactical instructions and details of coordination (other than signal items) that apply to two or more elements. When there are no coordinating instructions, this fact will be noted. It includes such information as:

(a) Critical times: leave assembly area, cross LD.

(b) Assembly area: location, markings, actions, formation when leaving.

(c) LD: location, marking, actions.

(d) Attack position: location markings, action.

d. **Service support.** Paragraph four of the OPORD covers administrative instructions and support provided for the operation. It should cover supply (ammunition, POL, rations, spare parts), services (hot food, water), medical evacuation, and handling of prisoners.

e. **Command and signal.** Paragraph five of the OPORD covers command and signal.

(1) **Command.** This includes the location of the platoon leader and platoon sergeant as well as the location of the company team CP. It may include succession of command if this is not in the SOP and the location where the leader plans to be during the battle.

(2) **Signal.** This includes any communications or electronics instructions used during the operation. At a minimum, it covers call signs and frequencies; it may also contain challenge and password, pyrotechnics, and signal restrictions. The signal subparagraph normally ends with a time check before the leader asks for questions. He should normally allow a minute or two for the subordinate leaders to look through their notes before ending the order and dismissing the group.

3-7. Operation order example.

a. **Situation.**

(1) **Enemy forces.** Elements of the 283d Motorized Rifle Regiment have established squad and platoon defensive

positions in our zone. Their most likely location is vicinity of Hill 301 (NB 782918). They are estimated at 80 percent strength, and their morale is good. They are equipped with BMPs and are capable of employing chemical weapons. They will probably defend in present position.

(2) **Friendly forces.** Company C attacks at 090600 Oct to seize Hills 309 (NB 783910) and 301 (NB 782918) to control the road that runs between these two hills. TF 2-76 attacks at the same time to seize Hill 205 (NB 782937) and 1st Platoon attacks at the same time to seize Hill 309 (NB 783910). The heavy mortar platoon will be in the vicinity of Hill 258 (NB 782402). The 1-45 Field Artillery (FA) (155 Self-Propelled [SP]) will support the battalion. Priority of fires to our company.

(3) **Attachments and detachments.** None.

b. **Mission.** 2d Platoon will attack at 090600 Oct to seize Hill 301 (NB 782918).

c. **Execution.**

(1) **Concept of operation.** 2d Platoon will attack dismounted at 0600, three-up: 1st Team, left; 2d Team, base; 3d Team, right; and BFVs overwatching from Hill 294 (NB 780916). Catfish Creek is assault position. From there we attack to seize OBJ Red (Hill 301) and prevent the enemy from using the road between Hills 309 (NB 783910) and 301 (NB 782918). When we consolidate, we must immediately prepare for counterattack. 1st Team consolidates from 9 to 11, 2d Team consolidates from 11 to 1, and 3d Team consolidates from 1 to 3. There will be a 15-minute artillery preparation at 0550.

(2) **Missions for subordinate units.**

(a) 1st Team: You will be on the left during the assault and reorganize from 9 to 11 on the objective. You will be first in the order of march from the LD to the assault position. 1st Platoon will be attacking Hill 309 on your left.

(b) 2d Team: You will be the base team in the center during the assault and will reorganize from 11 to 1 on the objective. You will be second in the order of march behind 1st Team from the LD to the assault position. The platoon headquarters will move between your team and 1st Team until we reach the assault position during the assault.

(c) 3d Team: You will be on the right during the assault and reorganize from 1 to 3. You will be last in the order of

march from the LD to the assault position following 2d Team.

(d) BFV element: You will support the assault from Hill 294 with fires concentrated on the objective. Then shift fires on order into engagement area Fox and and move to the objective on order.

(3) **Coordinating instructions.**

(a) Be prepared to depart assembly area at 0500.

(b) We will halt in the assault position to form for the assault.

(c) In consolidation, 12 o'clock is east.

(d) Limit of advance is 100 meters beyond the crest of the hill.

d. **Service support.**

(1) **Supply.** Two MREs per man. Each squad carry an additional 200 rounds of 5.56. Top off vehicles at 2000 tonight in your position.

(2) **Maintenance.** SOP except logistical release point will be at intersection of Phase Line (PL) NAIL and Route ANVIL.

(3) **Medical.** SOP.

e. **Command and signal.**

(1) **Command.** I will be with the dismount element, and the platoon sergeant will be with the BFV element. Succession of command is SOP.

(2) **Signal.** Current frequencies and call signs will be in effect. Signal for shifting supporting fires is two green star clusters, or on order. The time is 1600 hours. Look through your notes for a minute and I will answer questions.

3-8. Operation overlay.

An operation overlay is a trace of graphics from an operation map. Its purpose is to reduce the content and ensure understanding of the written or oral order. Normally, platoon and squad leaders will not be issued operation overlays. However, in conjunction with higher leaders' orders, platoon and squad leaders should transfer graphics to their maps. This will allow them to plan their actions based on a map reconnaissance deeper than the terrain may allow them to see. The overlay or transference should be simple but neatly done. It should

include all control measures used during the operation and all other information that can be depicted graphically, especially navigation and fire control measures such as checkpoints, TRPs, and engagement areas.

3-9. Fragmentary order.

The fragmentary order is issued to make a change to an existing order. Therefore, FRAGOs address only those items from the OPORD that are changed. Since FRAGOs are normally used during the conduct of an operation, instructions should be brief and specific. Although there is no standard format for a FRAGO, the following essential items are normally included:

a. Situation: enemy and friendly — includes a brief description of the enemy and friendly situations and should indicate the reason for the change in instructions.

b. Changes to the organization — may include the attachment or detachment of the platoon or part of it.

c. Orders to subordinate units — should be done by element. To avoid confusion, no element should be left out.

d. Fire support (if applicable — indicates any change in priorities or assets).

e. Coordinating instructions — as in the OPORD, includes all instructions that apply to two or more elements.

3-10. Unit standing operating procedure.

The unit SOP is a set of instructions having the force of orders. It covers areas that lend themselves to standardization with no loss of effectiveness. Many portions of the unit SOP should be built around tactical drills.

a. SOPs facilitate and expedite operations by:

(1) Reducing the number, length, and frequency of combat orders.

(2) Simplifying the preparation and transmission of combat orders.

(3) Simplifying training.

(4) • Promoting understanding and teamwork between the leaders and troops.

(5) Advising new arrivals or newly attached units of procedures followed in the organization.

(6) Reducing confusion and errors.

b. Contents of higher unit SOPs need not be restated in platoon and squad SOPs unless more detail is needed for actions to be accomplished at platoon and squad level. Virtually any item relating to the platoon can become a matter for the unit SOP. Many SOP items are derived from the personnel and equipment available to the organization. Other SOP items are a function of good tactics and techniques. SOP items can be established by leaders based on how they can operate most efficiently and best prepare their unit for combat. SOPs remain in effect unless modified by an order. If certain items continuously need modification, they should not be a part of the SOP.

CHAPTER 4

Movement

The tempo of mobile warfare and the contamination created by nuclear and chemical weapons demand that mechanized infantry units spend a lot of time moving. Although this chapter deals only with how platoons and squads move, rarely do they move alone. They may operate as part of a mechanized infantry company or as part of a company team with one or more tank platoons.

Section I. Concepts and Formations

Formations aid in command and control. Their general shape is set primarily by considerations of METT-T. The distance between vehicles or men will vary according to the terrain being crossed. Each vehicle or person will be guarding and searching a different sector to provide all-round security while on the move. Leaders direct movement by using arm-and-hand or flag signals. Radios should be used only as a backup means of communicating.

Leaders place themselves where they can best command and control movement. Their placement also is governed by the movement

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technique being used. (Movement techniques are discussed in detail in Section II.) It must be clearly understood that movement techniques apply to how a formation moves; they are not formations. For example, a platoon may move in a column formation using either the traveling or traveling overwatch movement technique.

4-1. Mounted concepts.

a. **Squad.** When mounted, the squad operates as one unit. Thus, it does not have the capability to overwatch itself. It is critical during movement that the squad members observe their sectors and keep the Bradley commander informed of what they see. This is done by the squad members with the two-way combat vehicle crew (CVC) helmets; they relay messages from other squad members. The Bradley commander must be aware of the limitations of the field of view of his driver and gunner. He must keep them informed of situations that directly affect their functions. The driver cannot see the right bumper or any of the right side. When the situation permits, the Bradley commander stands in his hatch for better observation.

b. **Platoon.** Normally, the platoon moves as a unit. The platoon leader selects the platoon route, unit formation, and distance between vehicles. The platoon sergeant maintains station on the platoon leader's vehicle. The other two vehicles orient on the platoon leader and platoon sergeant, respectively. The common term for this role is "wingman." When the platoon is moving independently of the company, the platoon leader may conduct movement by bounds and use his and the platoon sergeant's vehicles to form the two pairs. Their wingmen will make up the second vehicle of each pair and always move and orient on them.

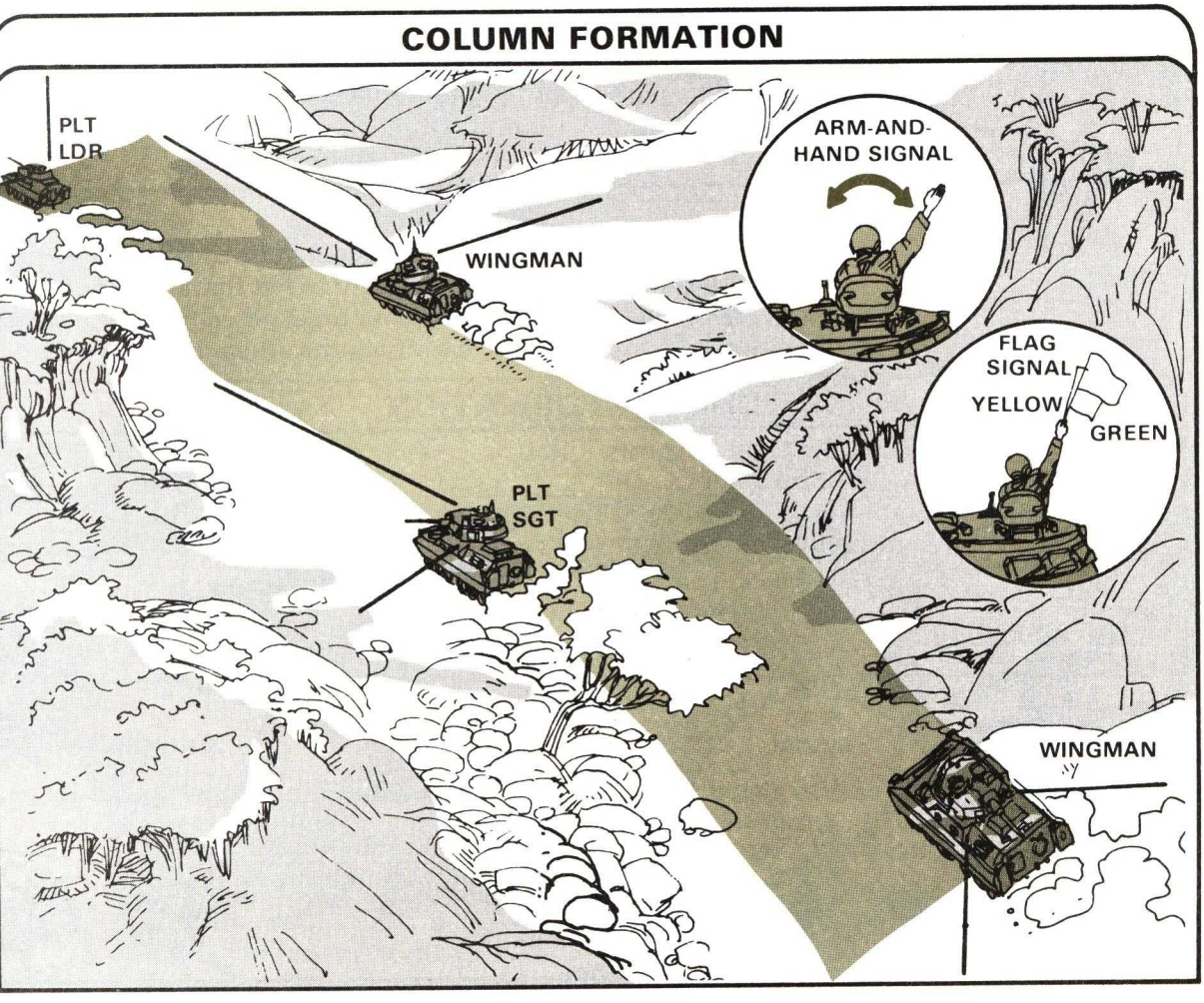
4-2. Mounted formations.

There are four formations for mounted movement at platoon level: column, line, echelon, and wedge. These formations, modified as necessary, permit the platoon to react appropriately in most situations and under most conditions. Reaction to enemy contact, as well as the requirement to change formations on the move, must be a matter of implementing one of a series of standard, thoroughly trained drills. In

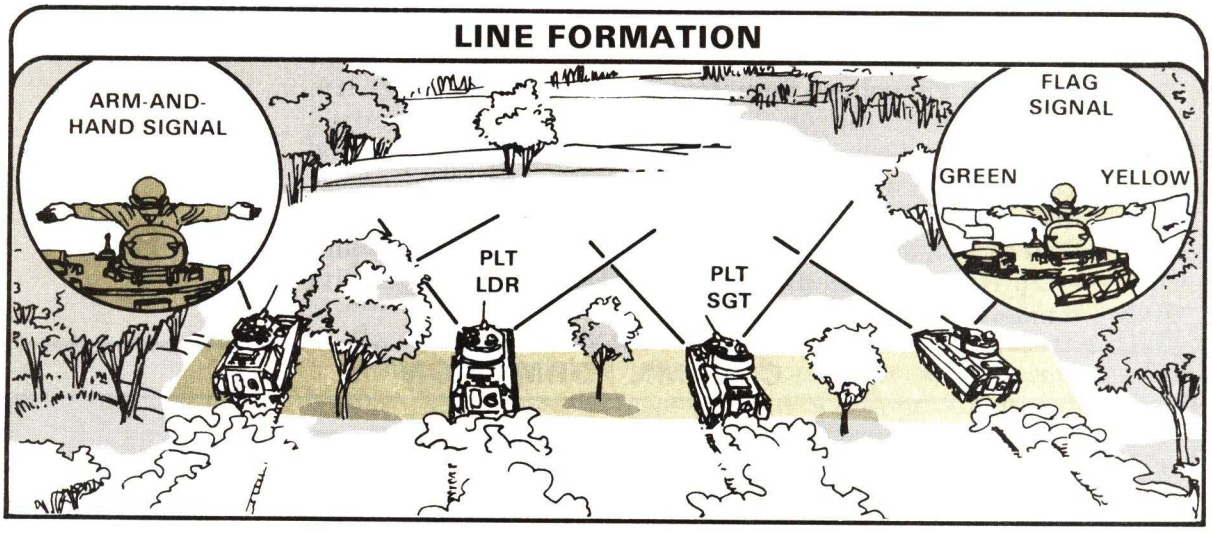
ddition, there are two security formations that are used when the ehicles are not moving: the herringbone and the coil.

. **Moving.**

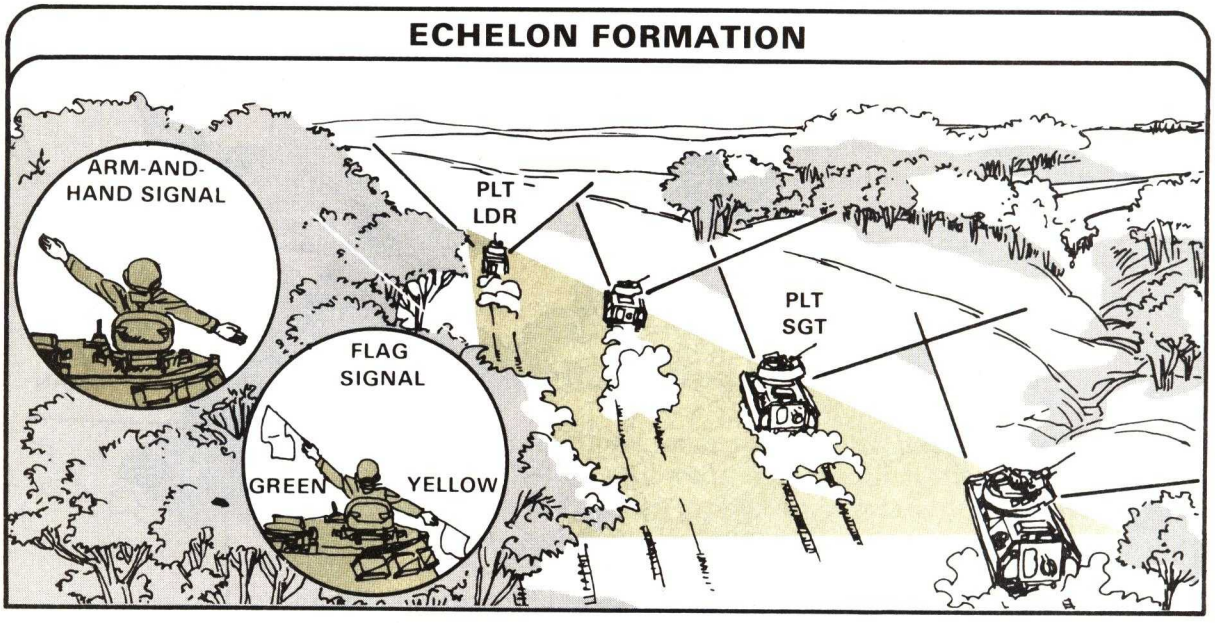
(1) **Column.** The column formation is used most frequently. It is used for road marches, for movement during limited visibility, and when passing through defiles or thick woods. The platoon can deploy rapidly from the column formation into other formations and is in a position to maneuver the trail section should the lead come into contact. The column simplifies control, provides good security, and permits maximum firepower to the flanks.



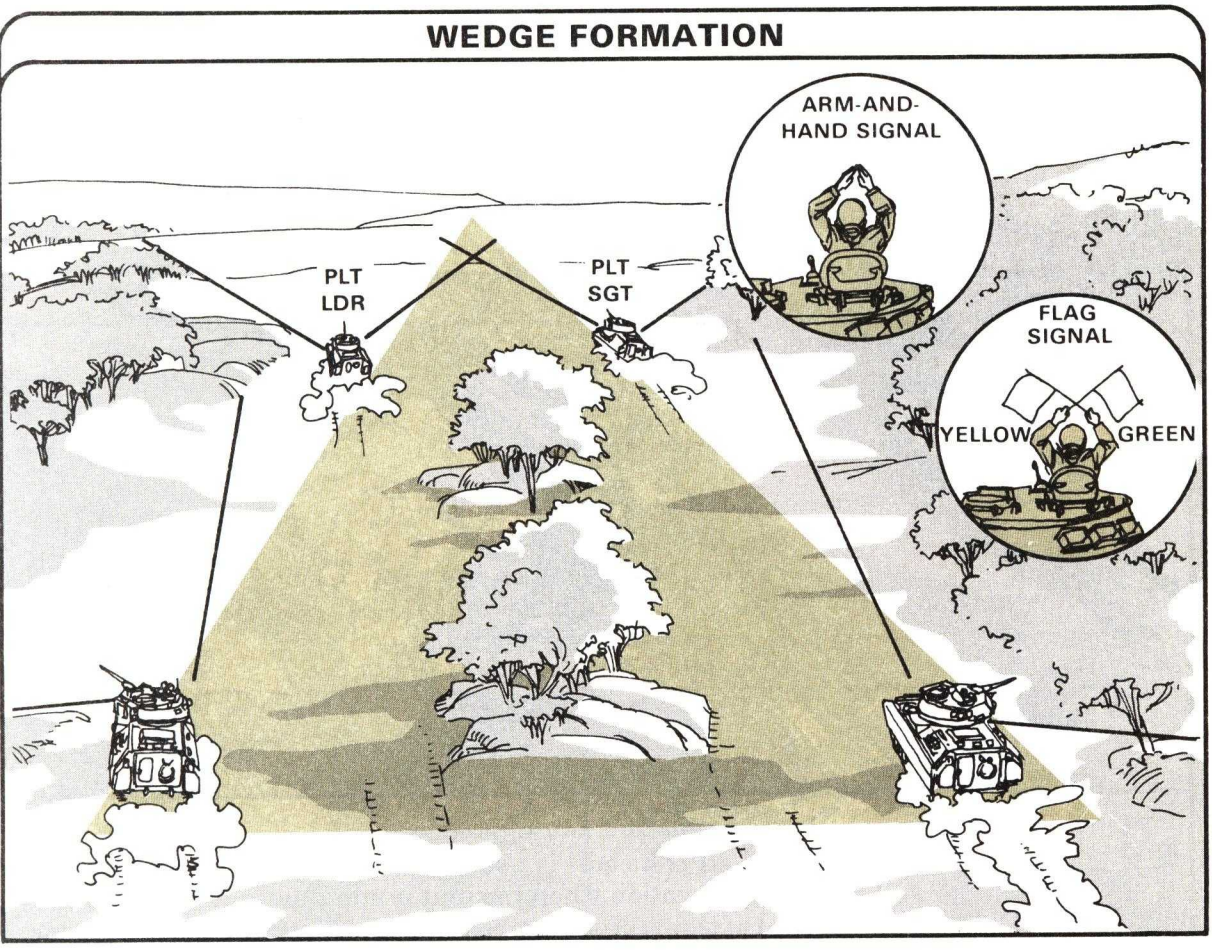
(2) **Line.** The line formation is used when assaulting an objective, crossing open areas, leaving a woodline, or emerging from smoke. This formation lets the platoon cross an objective rapidly with maximum fire to the front, but it lacks the depth of the column and the wedge formations. The distance between elements depends on terrain.



(3) **Echelon.** The echelon formation permits excellent firepower to the front and to either the right or left flank. It is normally used when a platoon is to cover an exposed flank of a larger force. If one pair makes contact, the other can maneuver.



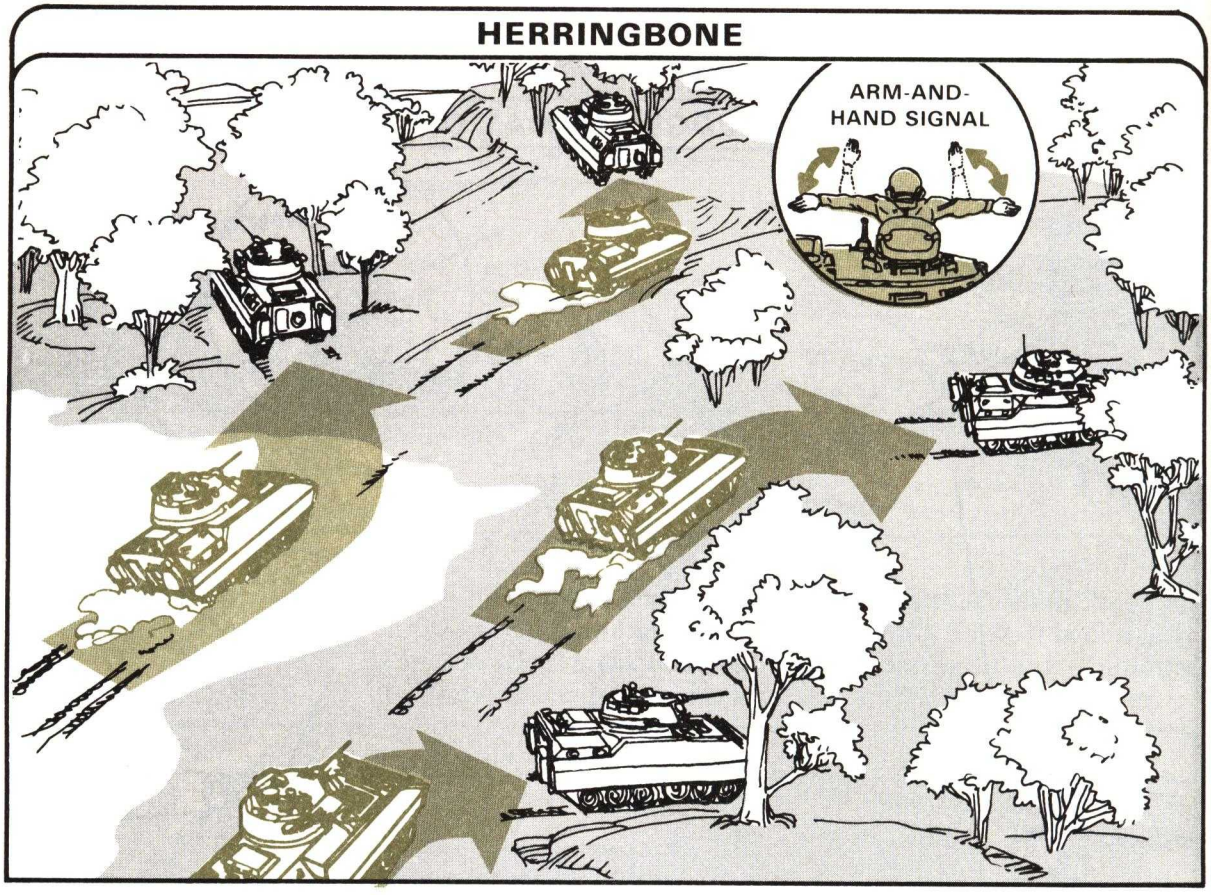
(4) **Wedge.** The wedge formation permits excellent firepower to the front and good fire to each flank. The platoon leader can easily control all vehicles and deploy rapidly into other formations. The wedge formation is often used when the enemy situation is vague. The orientation of the pairs is left and right. The platoon leader and platoon sergeant control the other BFV (wingman) of their pair by directing it to follow to the outside and to orient its weapons toward the flanks.



b. **Not Moving.**

(1) **Herringbone.** The herringbone is used as a battle drill to disperse the platoon when traveling in column formation. It is used during air attacks or when the platoon must stop during movement. It lets the platoon move to covered and concealed positions off a road or from an open area and establish all-round security without detailed instructions being issued. The vehicles are repositioned as necessary and,

as time permits, they take advantage of the best cover, concealment, and fields of fire. Selected rifle team members dismount and establish security during limited visibility or when there is more than a temporary halt.

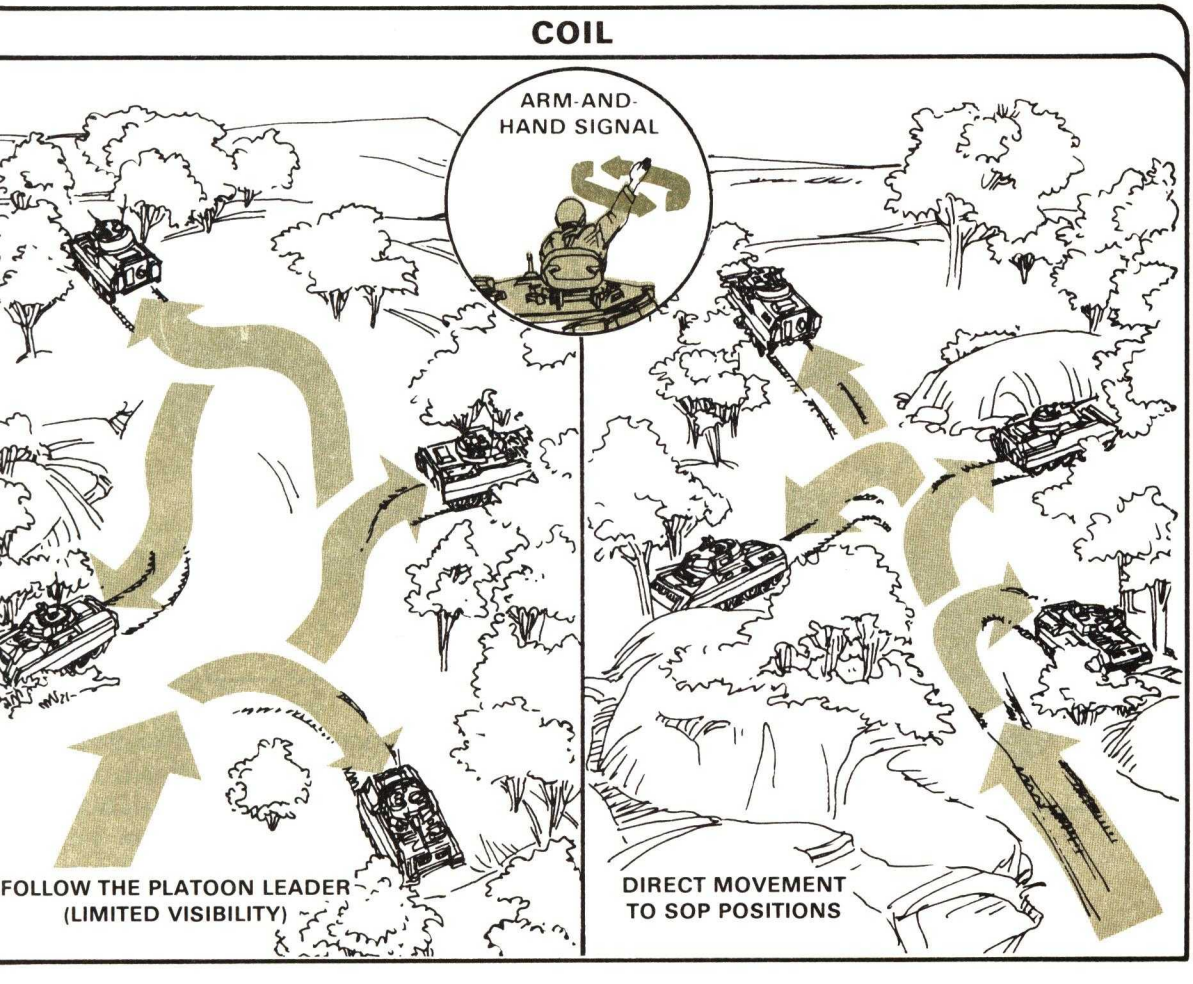


(2) **Coil.** The coil is used to provide all-round security and observation when the unit is stationary. It also is useful for tactical refueling, resupply, and issuing platoon orders. Because it presents an easy target, it is not designed to be used for long periods during daylight. Security is posted to include airguards and dismounted rifle teams. The vehicle turrets are manned. There are two methods to form a coil.

(a) In the first method, when visibility is limited, it is easier for the platoon leader to form the coil by leading his platoon in a circle. When the circle is complete, all vehicles stop, turn 90 degrees outward, and post security.

(b) The second method is done by the platoon leader signaling, quickly moving his vehicle into position, and stopping. The other vehicles move directly to their assigned positions, as stated in the platoon SOP, seek cover and concealment, and post security. This technique is used during daylight or whenever speed is essential. When the platoon is operating within a company, a company coil will be formed in the same manner. Each platoon is responsible for the security of a designated sector of the company coil.

(c) The platoon will often coil as part of a company team formation. In this situation, the lead and trail vehicles in the platoon maintain contact with the unit's front and rear and all vehicles orient their turrets outward.

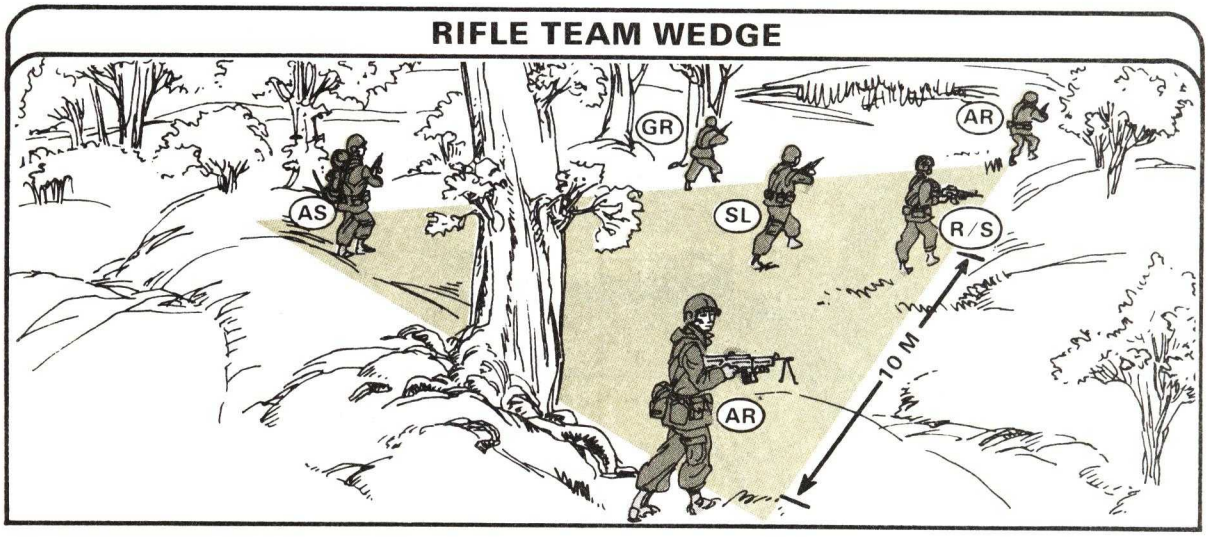


4-3. Dismounted concepts.

a. **Rifle teams deployed.** The rifle team moves as one wedge — alone or as part of the platoon (dismount element). Its movement is normally overwatched by the platoon's fighting vehicle element or by other rifle teams of the platoon dismount element. The squad leader or the assistant squad leader dismounts to lead the dismounted rifle team.

b. **Wedge positions.** Positions within the wedge are based on the mission, enemy situation, terrain, weather, light conditions, weapons carried, and the team's location within the rifle squad. Within the wedge, each man is assigned a sector of observation to provide all-round security.

c. **Intervals.** A normal interval between men is about 10 meters, but it may be less if visibility is poor. Terrain may also dictate temporary modification of the wedge formation. For example, the sides of the wedge will have to close in to single file when moving along a narrow mountain path, through a minefield, or through heavy undergrowth. But as soon as conditions permit, the wedge is resumed automatically.



d. **Squad leader position.** The position of the squad leader depends on his judgment as to how he can best control the team, maintain visual contact with the platoon leader, and navigate (if his team is leading). The squad leader will normally lead when using the traveling technique, and move back into the formation when using traveling overwatch. The squad leader sets the example for other squad members to follow when contact is made. The few seconds following initial contact often decide squad success or failure.

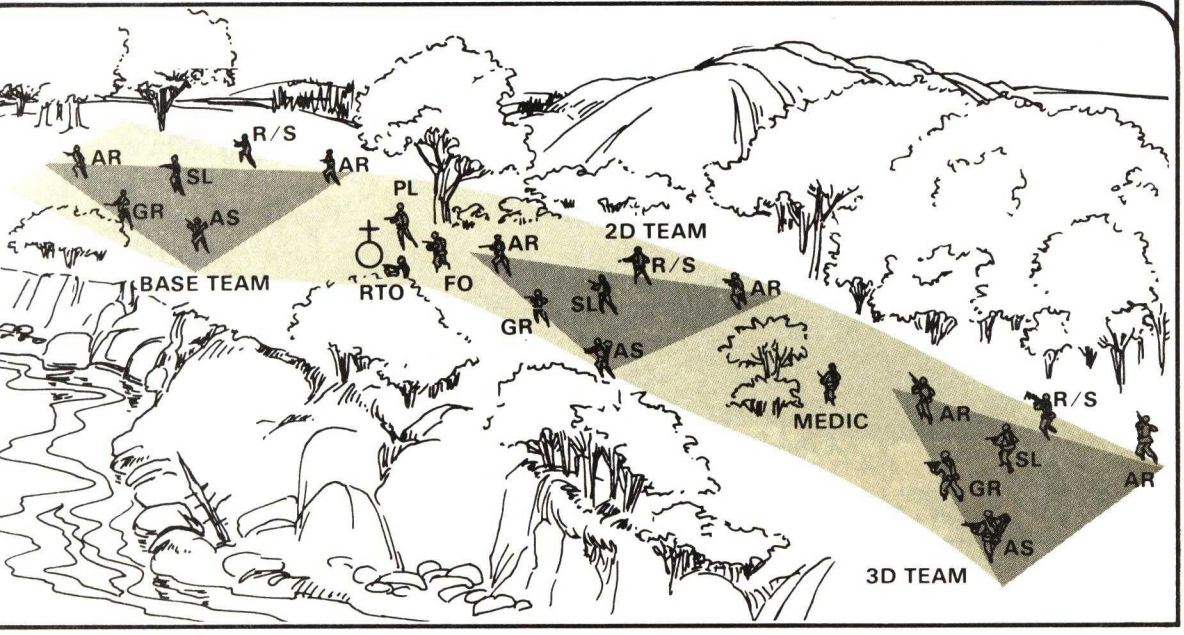
Thus, immediate action following contact is critical, and the rifle team must execute the correct drill swiftly. To facilitate this quick action, the squad must be trained to execute the standard drills quickly and correctly. If the squad leader remains with the BFV, the assistant squad leader assumes his position.

4. Dismounted formations.

ıe platoon is normally organized with three rifle teams and led by the ıtoon leader. The dismounted platoon uses three basic formations: lumn, line, and wedge. Upon contact, the ability to swiftly execute ındard, well-trained drills is again critical.

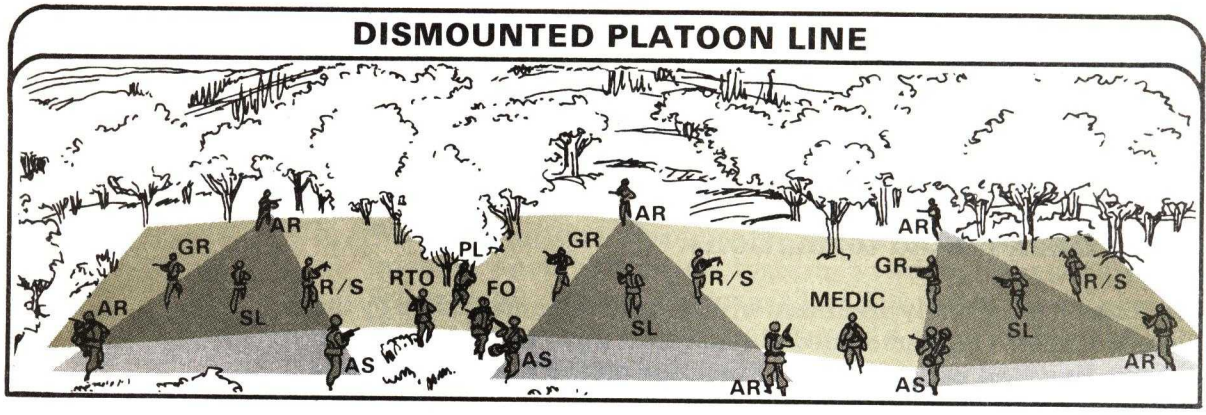
Column. The column is the chief movement formation. There is good dispersion in depth, and control is easier. This formation can deliver a limited volume of fire to the front and a high volume to the flanks. The base team is the lead team, and the other teams guide on it.

DISMOUNTED PLATOON COLUMN

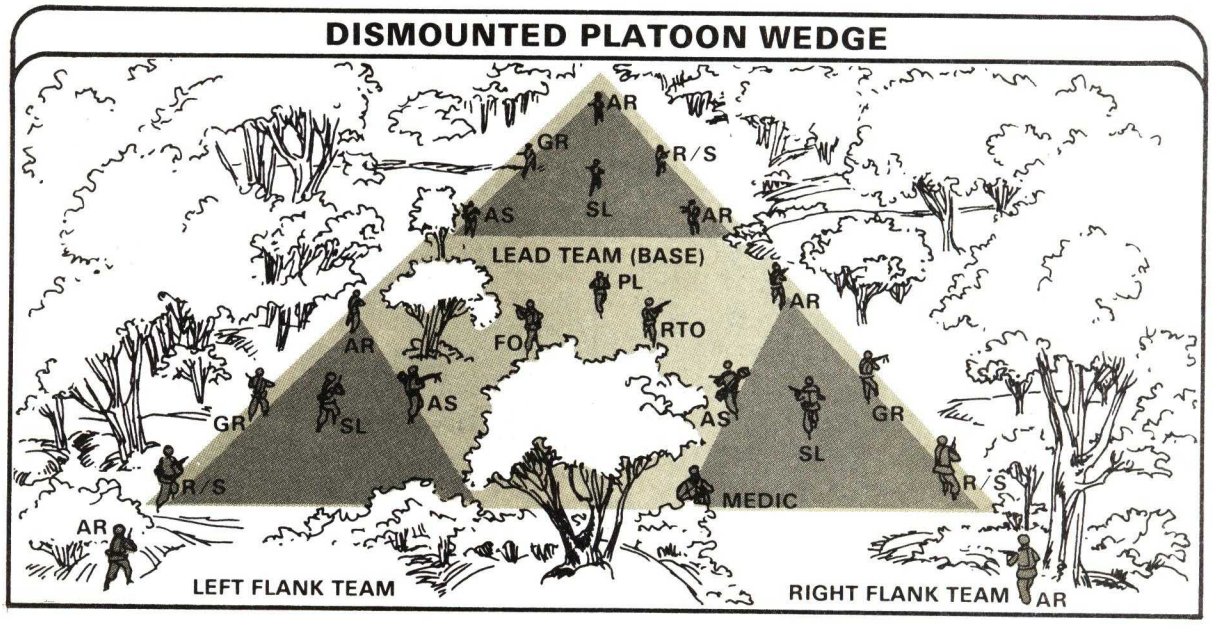


Line. The line is the basic assault formation. It provides good lateral dispersion. In this formation, the platoon can deliver the greatest amount of fire to the front. The platoon leader designates the base team. In this formation, the platoon must continue to use

fire and movement while taking advantage of cover and concealment offered by the terrain.



c. **Wedge.** The wedge is used when the enemy situation is vague. This formation permits a large volume of fire to the front and flanks. It will usually ensure that at least one team will be free to move when contact with the enemy is made. The lead team is normally the base team.



Section II. Movement Techniques

In many cases, a unit moving on the battlefield, when not in contact, encounters the enemy at a time and place of the enemy's choosing. To offset the enemy's advantage, movement techniques must be used that

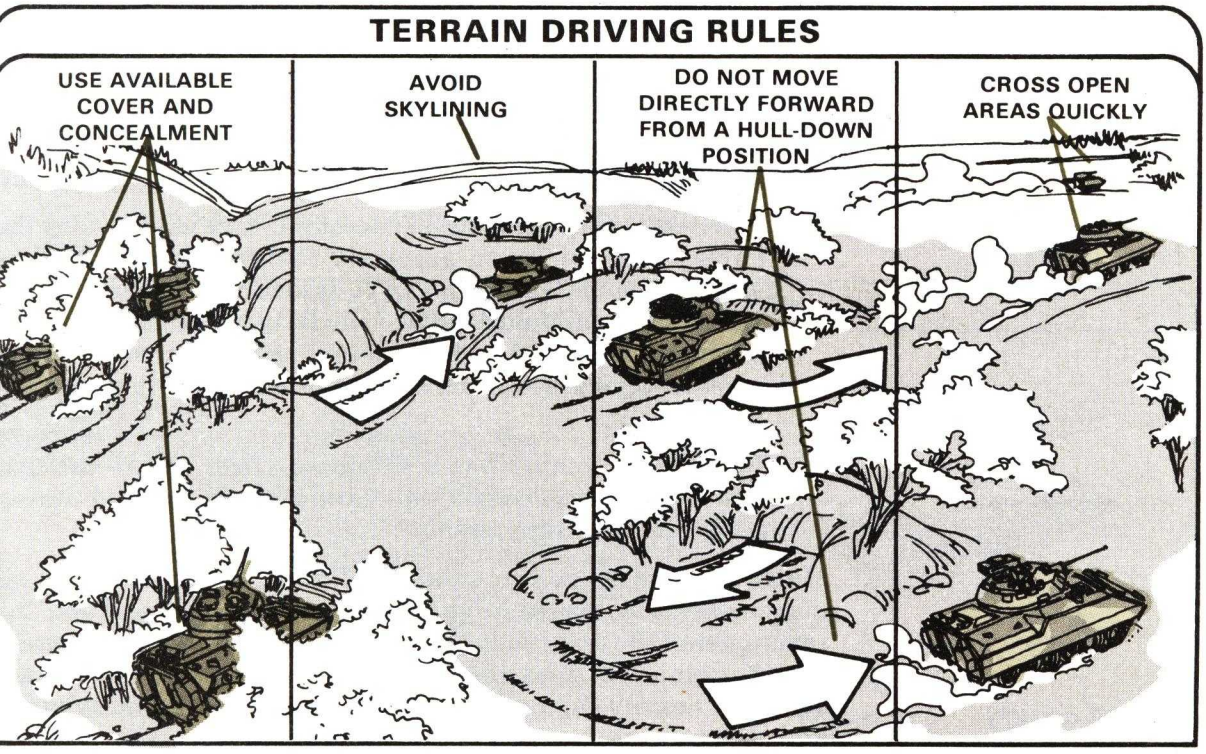
will cause initial contact to be made with the least number of men and vehicles, especially when the enemy situation is vague. This means that the smallest force will be leading. The rest of the unit should be in position to provide suppression to support the force that makes contact and to maneuver to attack the enemy. The transition from movement techniques to maneuver must be supported by standard, thoroughly trained drills.

Because the BFV can move rapidly while conserving the infantrymen's strength and reducing their exposure to chemical and radiological contamination, platoons and squads normally move mounted until the situation forces them to dismount.

4-5. Terrain use.

Whether moving mounted or dismounted, in contact with the enemy or not, platoons and squads should know the following rules:

a. **Use the terrain for protection.** Terrain offers natural concealment from enemy observation and cover against fire. Using terrain to protect vehicles is difficult, so, terrain driving should become a habit. It must be used when in contact with the enemy and when contact is possible or expected.


TERRAIN DRIVING RULES
USE AVAILABLE COVER AND CONCEALMENT
AVOID SKYLINING
DO NOT MOVE DIRECTLY FORWARD FROM A HULL-DOWN POSITION
CROSS OPEN AREAS QUICKLY

b. **Avoid possible kill zones.** Platoons and squads must avoid wide open spaces, especially where high ground dominates, or where terrain can cover and conceal the enemy. When this is not possible, the far side and flanks of the open area must be cleared before moving the force across. They must also avoid obvious avenues of approach into enemy territory. It is better to cross difficult terrain than fight the enemy on his terms. Engineers may be able to work the terrain to improve mobility.

c. **Take active countermeasures.** Platoon leaders should use smoke to obscure, as well as direct fire and indirect fire to suppress known or suspected hostile positions. The enemy should never be allowed an open, unhindered shot at mounted or dismounted friendly elements. This calls for constant alertness and thorough planning, coordination, and reconnaissance.

d. **Maximize the BFV's capabilities.** The fighting vehicle has good speed and, on the move, can quickly change direction or stop. Bradley commanders and drivers should use any available depressions and trees to avoid enemy ATGM fire. When moving to a new position, the driver should make use of the BFV's dash capability whenever possible.

   (1) When necessary to cross an open area, the lead Bradley commander and the platoon leader check for enemy activity, obstacles, and routes across the open space. The BFV's thermal sight allows the infantrymen to "see" in darkness, through smoke, fog, and even light vegetation and camouflage. For this reason, thermal sights should be used during daylight as well as at night. Normally, at least one BFV in each pair should have its thermal sight on during daylight.

   (2) The onboard smoke-screen generator can be used to deny the enemy the ability to precisely locate the vehicle. The smoke-grenade launchers can be used to create an immediate smoke screen around a halted vehicle. In both cases, however, judgment is needed to determine if smoke is more likely to reveal a vehicle's location and direction, rather than obscure it.

   (3) Because the vehicle has a stabilized turret, the 25-mm gun and the 7.62-mm coaxial machine gun can be used during movement for suppression.

e. **Make contact with the smallest force possible.** During all movement, it is best to have a small force in the lead and the remainder of the unit ready to react and support. Making contact with the smallest possible force avoids having an entire unit suddenly heavily engaged. Thus, the unit retains flexibility to fire and move.

(1) When not in contact, a lead or bounding force is supported by a trailing or overwatch force. Suppression is gained by direct and indirect fires or smoke, brought to bear on enemy personnel, weapons, or equipment, thus forestalling effective fire on friendly forces.

(2) When in contact, one force moves while another force provides fire support or suppression. Suppression is gained by direct and indirect fire or smoke, brought to bear on enemy personnel, weapons, or equipment, thus forestalling effective fire on friendly forces.

4-6. Mounted movement techniques.

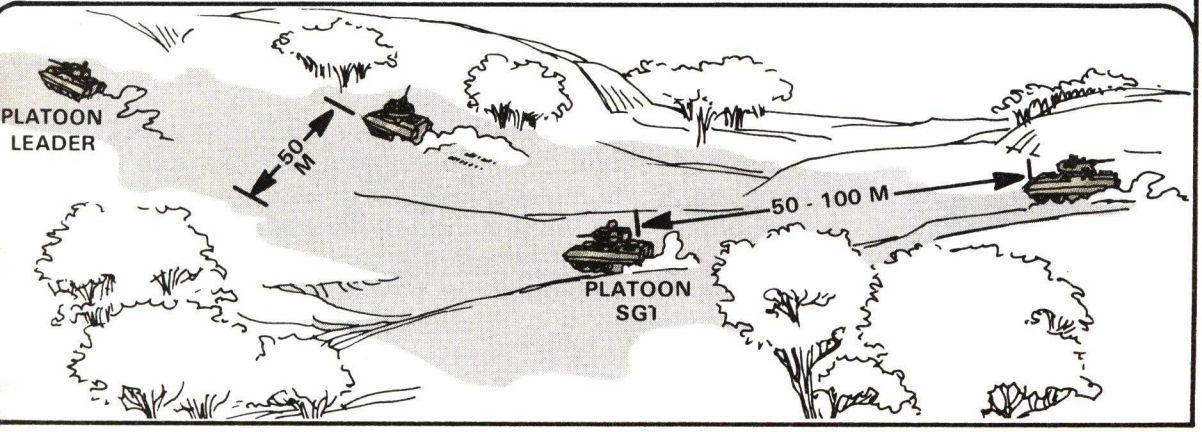
There are three methods of moving when not in contact. The platoon should adjust its movement technique to fit the likelihood of contact.

METHODS OF MOVING WHEN NOT IN CONTACT

LIKELIHOOD OF CONTACT	MOVEMENT TECHNIQUE
Not likely	Traveling
Possible	Traveling overwatch
Expected	Bounding overwatch

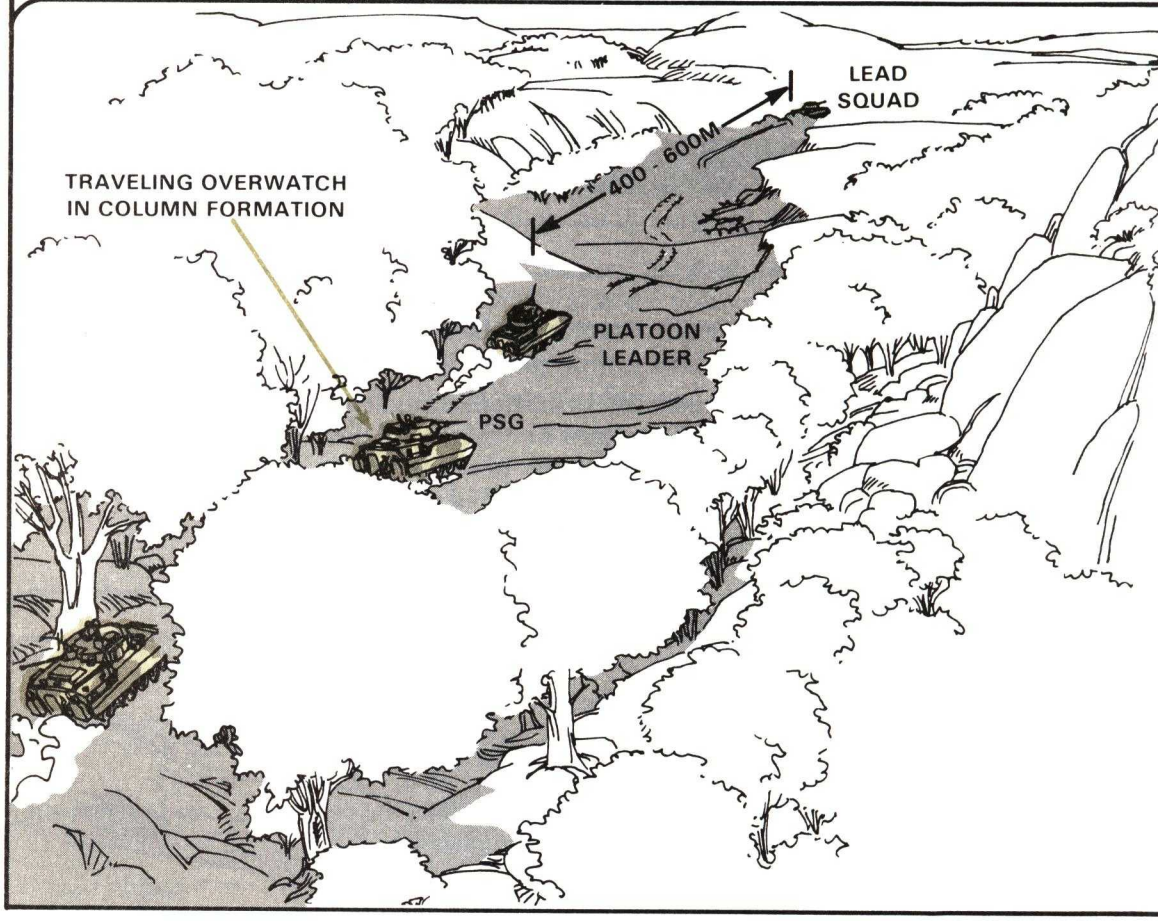
a. **Traveling.** The platoon moves in a column formation, staggering laterally, with intervals of 50 to 100 meters between vehicles. Turrets are oriented for all-round security. The platoon leader normally leads since contact is not likely and speed is essential. The column formation is common to the traveling movement technique.

TRAVELING PLATOON MOUNTED



b. **Traveling overwatch.** A platoon in traveling overwatch move in a column, wedge, or echelon formation using tu orientation procedures. (As noted earlier, the platoon should n mounted in pairs — one under the platoon leader's control other controlled by the platoon sergeant.) Movement of the w platoon is continuous, and cover and concealment are used to greatest degree. The trailing or overwatching BFVs key t action to the lead pair and vary their rate of movement as requ to maintain the desired interval. Visual contact between overwatching vehicles and the lead vehicle or pair mus maintained. The lead pair may have to reduce its speed if overwatching vehicles cannot keep up.

TRAVELING OVERWATCH

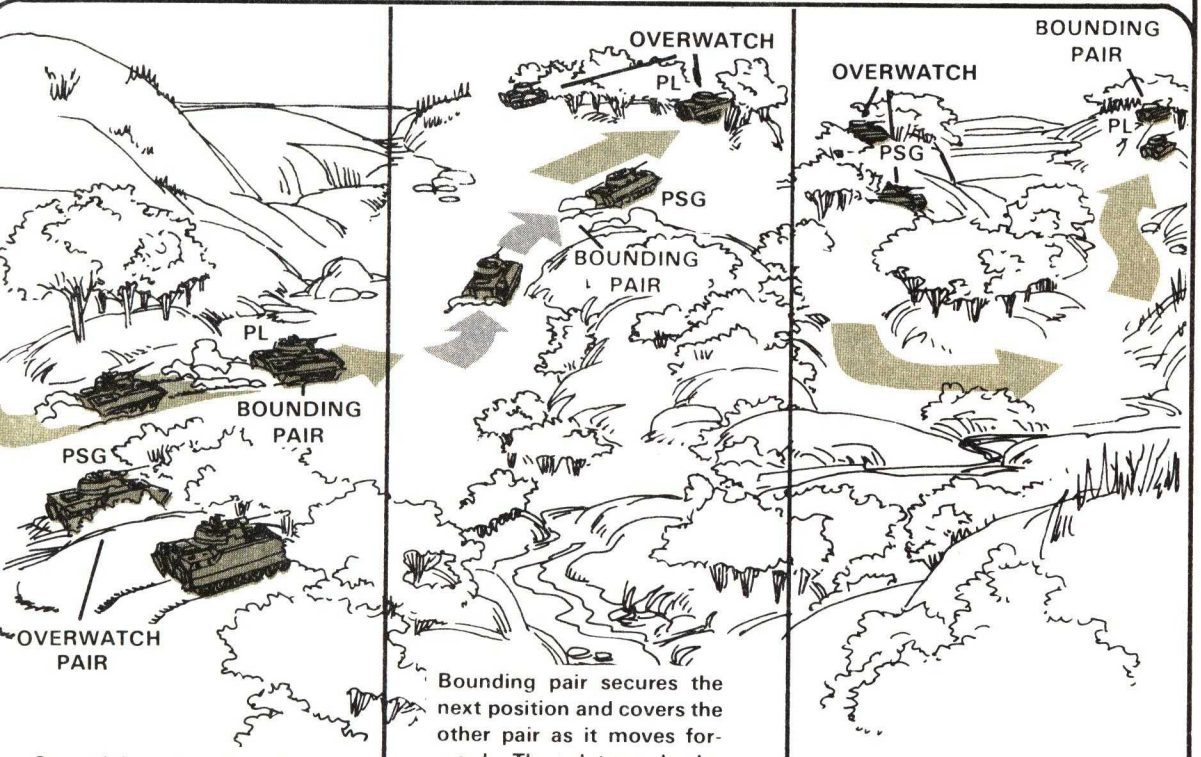


c. **Bounding overwatch.**

(1) When the platoon uses mounted bounding overwatch, on two vehicles may bound while the others overwatch fro

stationary position in a line or wedge formation. When the new position is reached, the bounding squad(s) dismounts enough men and weapons for local security. If the new position is relatively open, the bounding squad(s) may not need dismounted personnel to secure the position. As soon as the position is secured, the bounding squad(s) covers the rest of the platoon as they move forward. The process is repeated for subsequent moves.

BOUNDING OVERWATCH



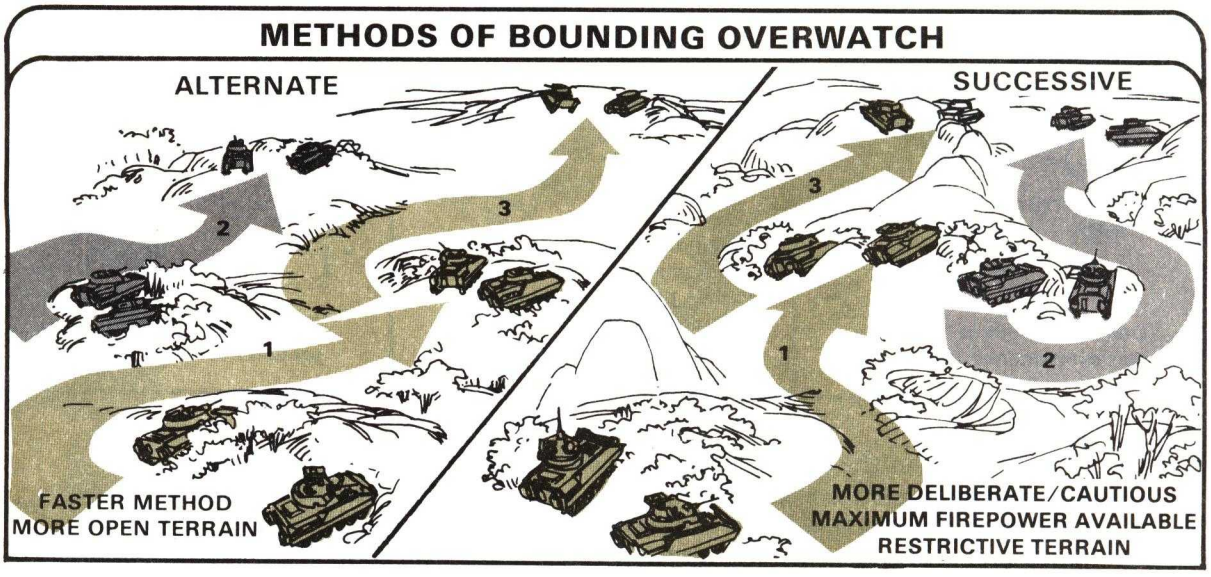
(2) The vehicles in the overwatch pair should follow the platoon or company SOP for weapons-ready posture. For example, all BFVs might have their TOW launchers erected and self-tested with one designated to fire, another ready to fire its 25-mm gun, and the third ready to fire its 7.62-mm coaxial machine gun. Each gunner should be prepared for immediate engagement and designated gunners should have their thermal sights on. Those chosen to ready the 25-mm gun should select the proper ammunition and rate of fire and turn the superelevation to the estimated range of the most likely

target. Those selected to fire the 7.62-mm coaxial machine gun also turn their superelevation to the range of the most likely target. This arrangement ensures that the overwatch force can provide immediate and accurate fire support with the proper weapon and ammunition. This can be adjusted to fit the enemy situation, terrain, and availability of ammunition and missiles.

(3) All overwatch forces have basically the same tasks. They must be able to cover the move of the bounding pair with direct fire using the prescribed weapons-ready posture. They must be able to move in support of the bounding pair and have the capability of calling for indirect fire. They should cover the flanks and rear as well as the front of the bounding pair and they should have concealed, protected positions.

(4) When the platoon is bounding or when it is overwatching another unit, the platoon leader assigns each pair of BFVs a sector to observe and, if necessary, to cover by fire. Sector identification may be by specific area or by TRPs, CPs, or the platoon may have an SOP (such as the clock system) to denote squad responsibility.

(5) There are two ways to execute bounding overwatch —alternate and successive.

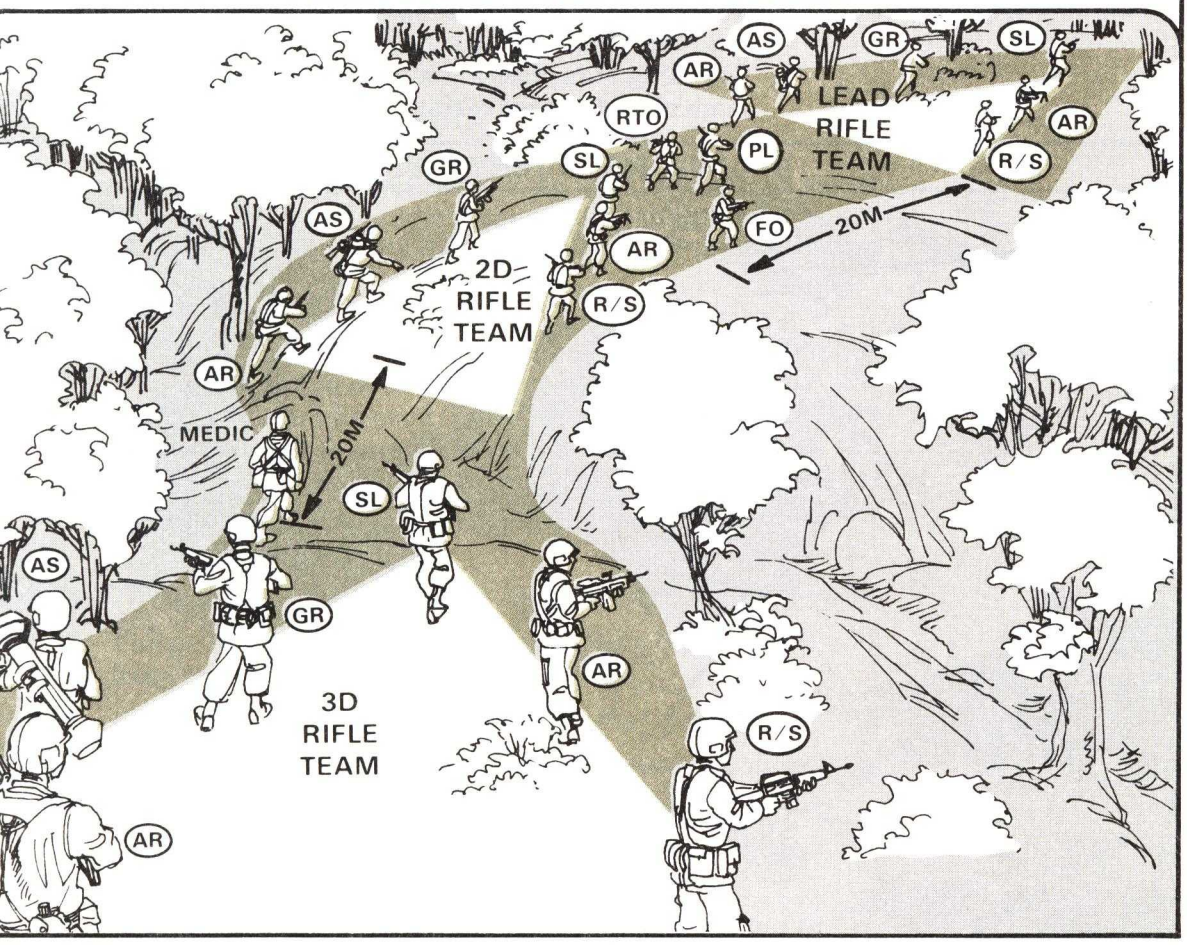


4-7. Dismounted movement techniques.

a. **Traveling.** This technique is not used often since, when contact is not likely, the platoon normally remains mounted. Sometimes the

platoon has missions that require the dismount element to operate on foot. The traveling technique is normal for trailing platoon dismounted elements in a company dismounted formation. The element's formation is adjusted to fit the situation. Squad leaders normally move at the head of their squads where they have better control and can see the platoon leader. When possible, the fighting vehicle element should be in position to support the dismount element.

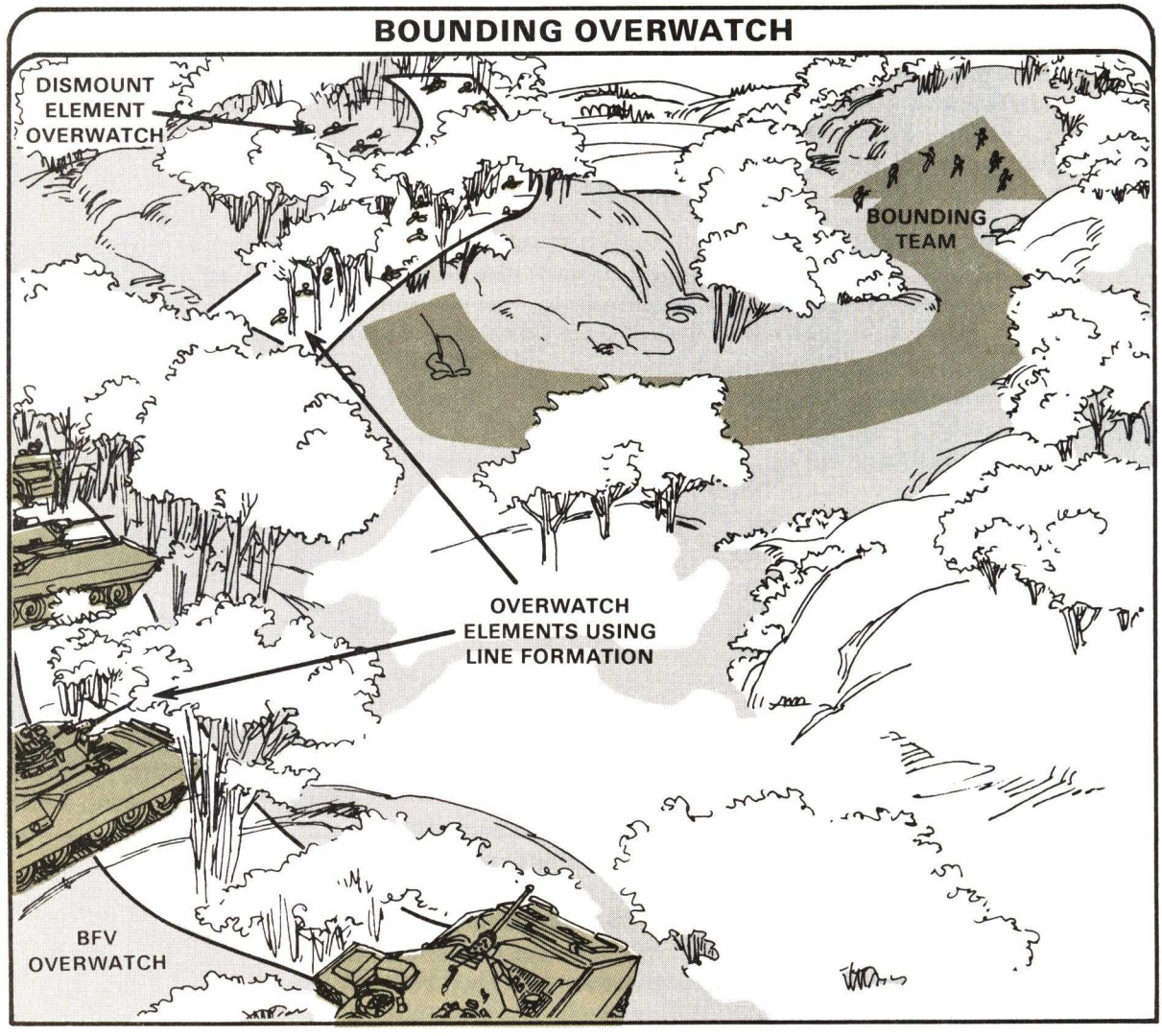
TRAVELING DISMOUNT TEAMS



Traveling overwatch. The dismount element normally uses a column or wedge formation. The lead team tries to move at least 50 meters, but preferably 100 meters or more, in front of the rest of the element. The BFVs may be even farther to the rear or to a flank but should be in position to overwatch the dismount element, mainly its lead team. Dismounted traveling overwatch may be used in close terrain where bounding overwatch is not possible.

c. **Bounding overwatch.**

(1) When contact is expected and the terrain will not permit mounted movement or when the dismount element is separated from the vehicles, the platoon bounds with the dismount element deployed. This is done the same as mounted bounding overwatch except that the length of the bound is reduced because the dismounted weapons have shorter ranges than the BFV's mounted weapons. The bounding team uses a wedge formation while the overwatch team normally uses variations of the line or wedge formation.



(2) The fighting vehicles should be placed where they can overwatch the dismount element. To do this, the fighting vehicles may have to use some form of bounding overwatch. The dismount and vehicle elements form a maneuver system with one moving while the other is set.

-8. Orders for movement.

. Regardless of movement technique to be used, the platoon leader should give the platoon an order that explains what each team is to do. This becomes more critical as the chance for enemy contact increases.

. Before using bounding overwatch (mounted or dismounted), the platoon leader must be sure that the bounding force and the overwatch force know exactly what to do by giving clear and complete orders. When possible, this is done from the position that he intends to use for the overwatch. He should tell them and show them:

(1) The enemy situation as he knows or suspects it to be.

(2) The next overwatch position (objective for the bounding force.)

(3) The route of the bounding force to that position.

(4) The positions and weapons-ready posture of the overwatch force.

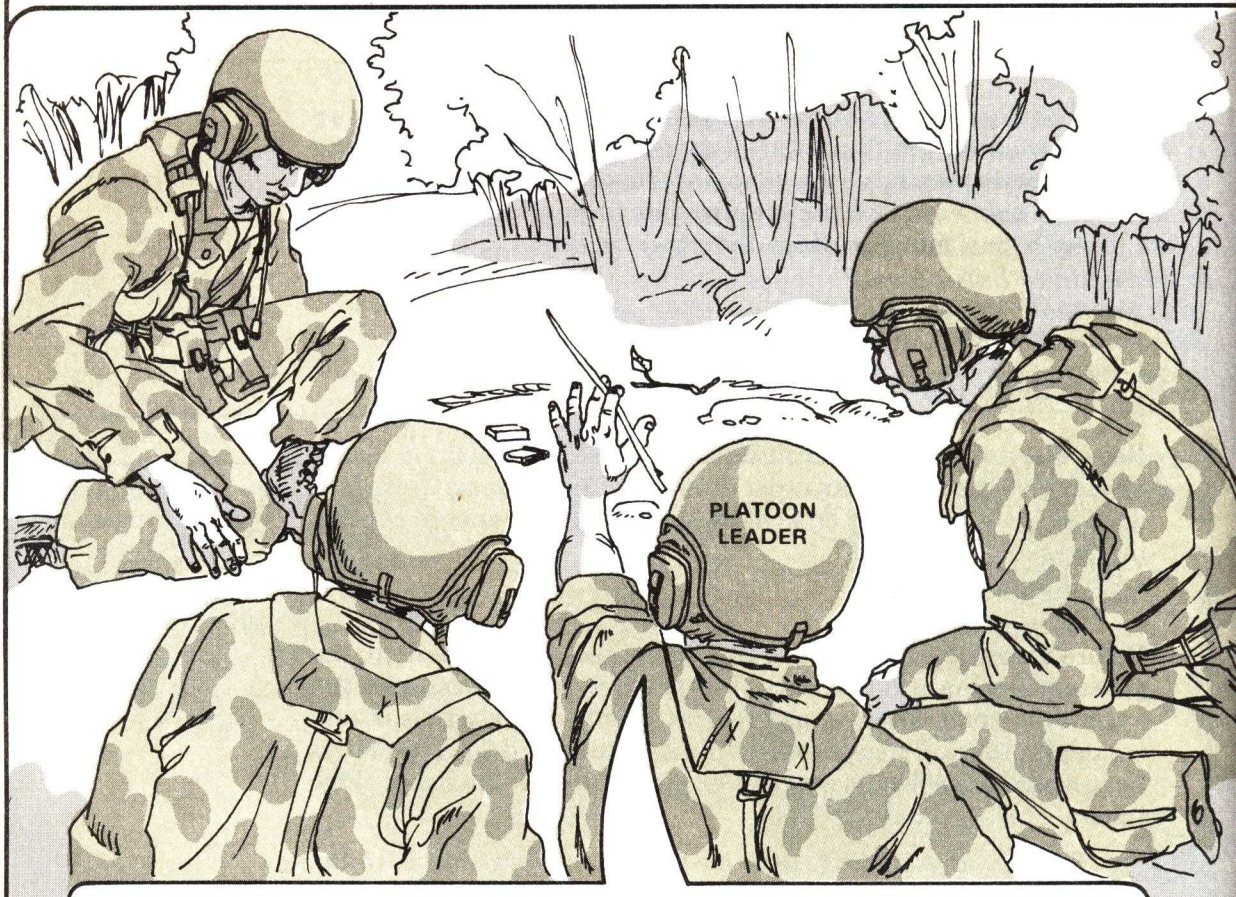
(5) What the platoon leader intends to do after the bounding force gets to the next position.

(6) The location of target reference points and sectors of fire.

(7) How he sees the fight developing, what the enemy may do, what his reaction will be.

c. With well-trained platoons and squads, leaders should be able to give almost all orders for movement techniques by pointing, using arm-and-hand signals, and following SOP weapons-ready posture.

PLATOON LEADER'S ORDER



SITUATION

Our company will be moving to contact with two platoons leading. 3d Platoon will be on the left and we will be on the right. The enemy probably has armored vehicles on one of the hills to our front, and he will probably attempt to delay us.

MISSION

2d Platoon conducts a movement to contact clearing the area to our front beginning at 1100 hours.

EXECUTION

I expect contact in this area, so we will move mounted and use bounding overwatch. The platoon sergeant and his wingman will move through the tree line to our right front and guide along the left of the creek. Check out the hill to our front — the one with the farmhouse. If you do not make contact, take up a position on the hill from which you can cover the hill farther to our front. Deploy your infantry for security. If you make contact, suppress the enemy and attempt to destroy him or drive him away. Dismount your infantry to clear the enemy if the terrain causes you to expose your vehicle to ATGM fire. Pay particular attention to the area around the farmhouse. My wingman and I will cover you from here until you secure your position. After you are set, we wil follow the same route you took and join you. Erect your TOW launchers and watch for armored vehicles on the far hill. That is about 2,300 meters. My vehicle will be ready to fire the 25-mm gun on the hill with the farmhouse. Index 1,200 meters of superelevation and be prepared to fire HE to suppress ATGM. My wingman will erect his TOW in case he sees an armored target that you can't see. He will also be prepared to fire 25-mm AP at armored vehicles other than tanks. My wingman and I will have our coax's ready and we'll cover the tree line and the creek area. When we move forward, I will lead. Artillery and mortars are plotted on the farmhouse and are on-call through me. Smoke is also available in case you run into trouble and need to screen your movements.

SERVICE SUPPORT

Ensure that your vehicles are topped off and that ammunition is cross-leveled. The company commander doesn't want to be held up by anything but a superior enemy force. Plan on eating MREs for the rest of the day.

COMMAND AND SIGNAL

Frequencies and call signs remain the same. I will stay with the trail element while we bound and will move up immediately if we make contact. The time is 0950. Are there any questions? . . . Move out.

4-9. As a part of the company or company team.

a. When the platoon is moving as a part of the company or company team, the entire platoon may be the bounding force. The platoon may also serve as all or part of the company or company team overwatch force.

b. When the platoon is the company bounding force, it may bound mounted or dismounted. If mounted, the platoon normally uses a combination of traveling overwatch and bounding overwatch techniques within the platoon. If deployed, the dismount element normally uses bounding overwatch. The platoon has more freedom to move than when operating independently because the remainder of the company or company team is in overwatch. When the dismount element is bounding, the company or company team commander may direct the fighting vehicle element to remain with the company overwatch. But, if he does not specify, the platoon leader will position the fighting vehicles to best support the bounding dismount element.

4-10. Movement with tanks.

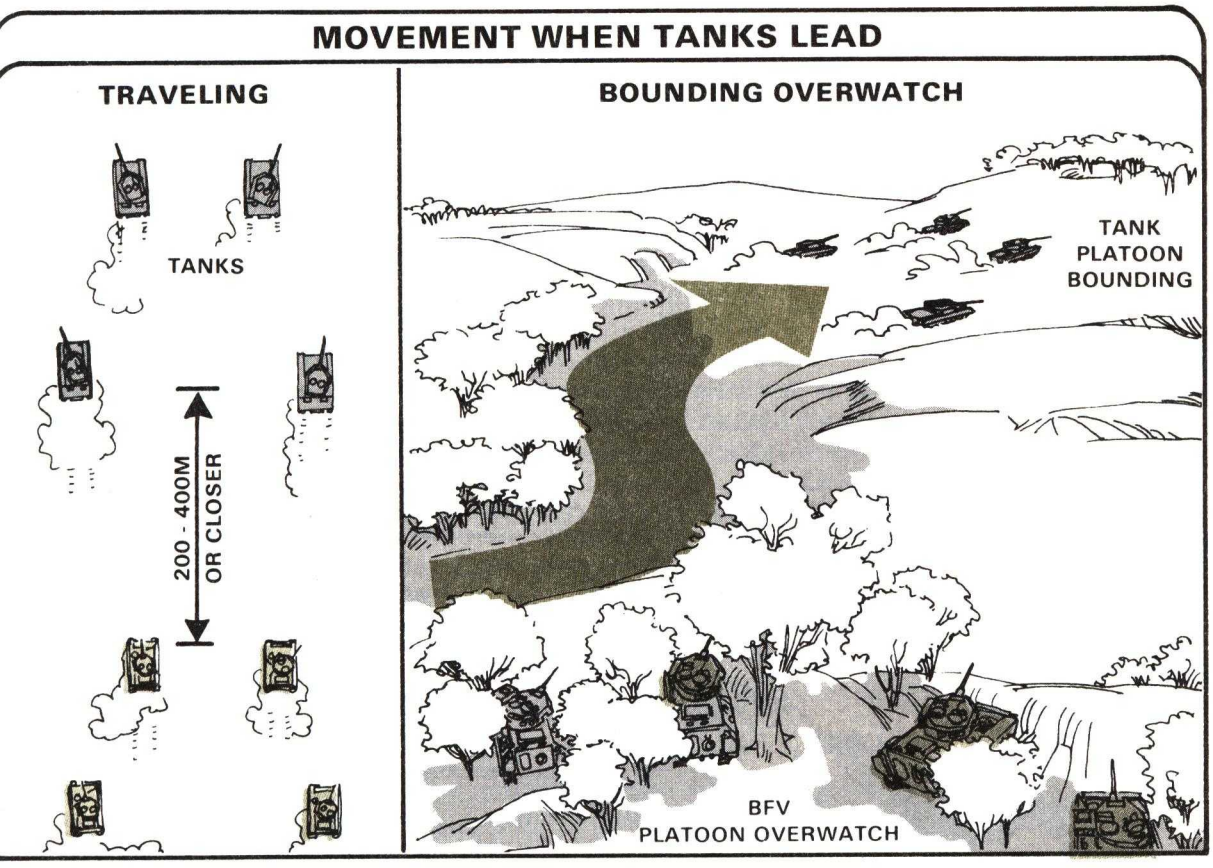
In a company team, mechanized infantry platoons operate with tank platoons. Each has weaknesses for which the other can compensate; therefore, they move together always and are prepared to support each other. When terrain and visibility permit mounted movement, tanks normally lead followed or overwatched by BFVs.

a. **How the platoon moves when tanks lead.**

(1) When the company team is using traveling or traveling overwatch techniques, its commander will tell the platoon where it should move and how far to be behind the tanks. Normally, the platoon will use the traveling technique that calls for following the tanks closely enough to shoot between them and to their flanks with the 25-mm gun (HEI-T) and 7.62-mm coaxial machine gun. The platoon normally moves 200 to 400 meters behind the tanks to avoid fire directed at the tanks. But, since its mission at this time is to protect the tanks from enemy infantry and antiarmor weapons, the platoon may have to move closer to the tanks.

(2) When the company team is using bounding overwatch, a tank platoon is usually the bounding force overwatched by BFVs, and, in some cases, by other tanks. When overwatching tanks, the BFV platoon must observe to the tanks' rear, flanks, and front. Tankers have difficulty seeing behind

them, so one of the platoon's primary jobs is to protect the tank's rear and flanks from enemy infantry attack. The platoon must be alert for enemy ATGMs and RPGs. If a squad sees an ATGM fired, it should immediately fire its 25-mm gun (using HEI-T ammunition) at the base of the smoke trail left by the enemy missile, and it should send a warning over the radio.



b. **How the platoon moves when it leads tanks.**

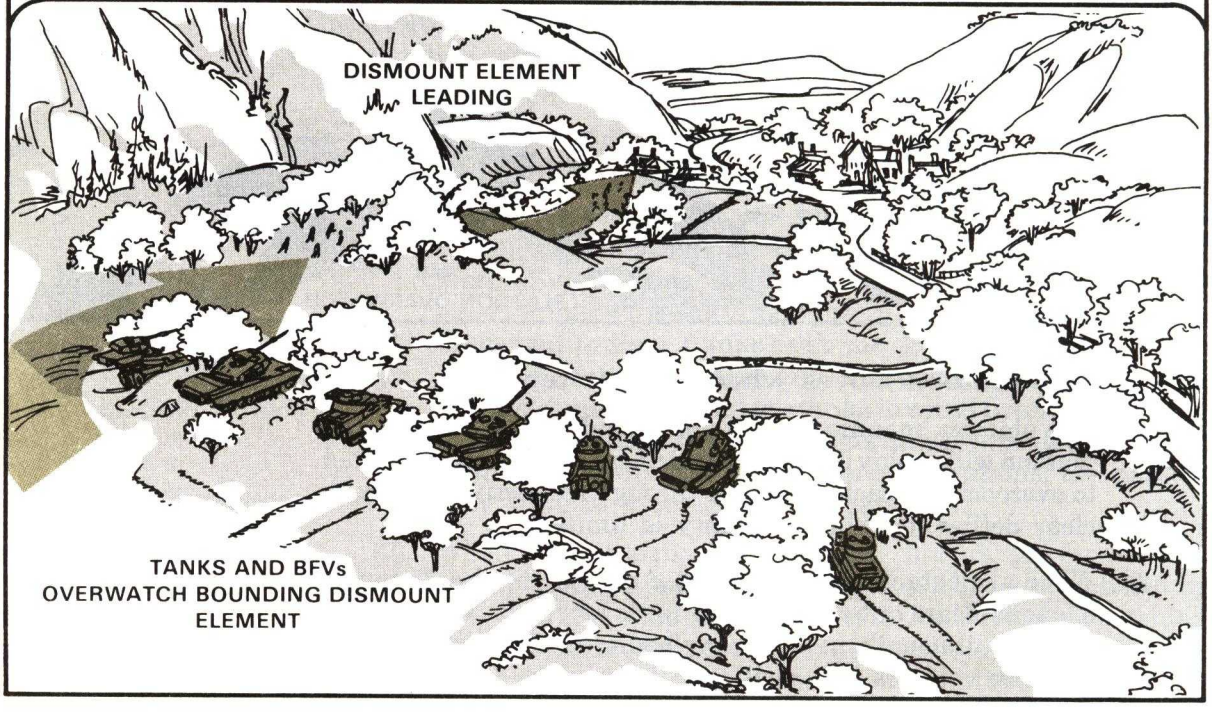
(1) The platoon, mounted, will seldom lead tanks. Usually, the platoon will deploy its dismount element and lead dismounted to overcome obstacles, to move through restrictive terrain, to clear defiles, or when visibility is limited.

(2) When an obstacle hinders mounted movement, the dismount element clears or breaches it, or finds a bypass. To get to the obstacle, it usually moves using bounding overwatch, while fighting vehicles are positioned to support.

(3) When visibility interferes with the mounted company team movement, the dismount element leads, overwatched by the fighting vehicle element and tanks. During poor visibility, the dismount element may have to use traveling overwatch even though contact is expected. The lead rifle team moves as far forward as it can without breaking visual contact with the platoon leader.

(4) Fire control is difficult while moving during limited visibility, but it is facilitated by using the wingman concept. It can be done, but only if the platoon has developed well-understood SOPs and practiced its battle drills. Indirect fire illumination should not be relied on since it is slow and not very effective in smoke, fog, snow, dust, or heavy rain. Additionally, heavy rain or cold fog reduces thermal sight range capability. Though the thermal sight allows the BFV to acquire a target at significant distances during reduced visibility, it does not provide a clear enough sight picture for vehicle identification. Units using thermal sights for long distances must establish positive identification and check fire procedures to preclude destroying friendly vehicles by mistake.

MOVEMENT WHEN INFANTRY LEADS TANKS



4-11. Danger areas.

a. The infantry platoon normally moves mounted to take full advantage of the firepower, speed, and protection of the BFV. When moving through forested areas, towns, or where there is a possibility of an ambush, the platoon leads with a dismount element to protect against enemy short range ATGM. Defiles, bends in roads, or river crossing sites are all likely ambush locations. Rifle teams or engineers are deployed to breach obstacles, to find a route around impassable terrain, and to provide security. Dismounted operations should be kept to a minimum because they reduce the speed of the company or company team; however, since the BFV is vulnerable to short range ATGM, suspected vehicle ambush areas must be treated with caution. If available, tanks and in some cases their main guns can be used to force hastily constructed obstacles, after the obstacle area has been secured by infantry. This technique keeps the momentum up and doesn't require that the force wait for engineers to be brought forward.

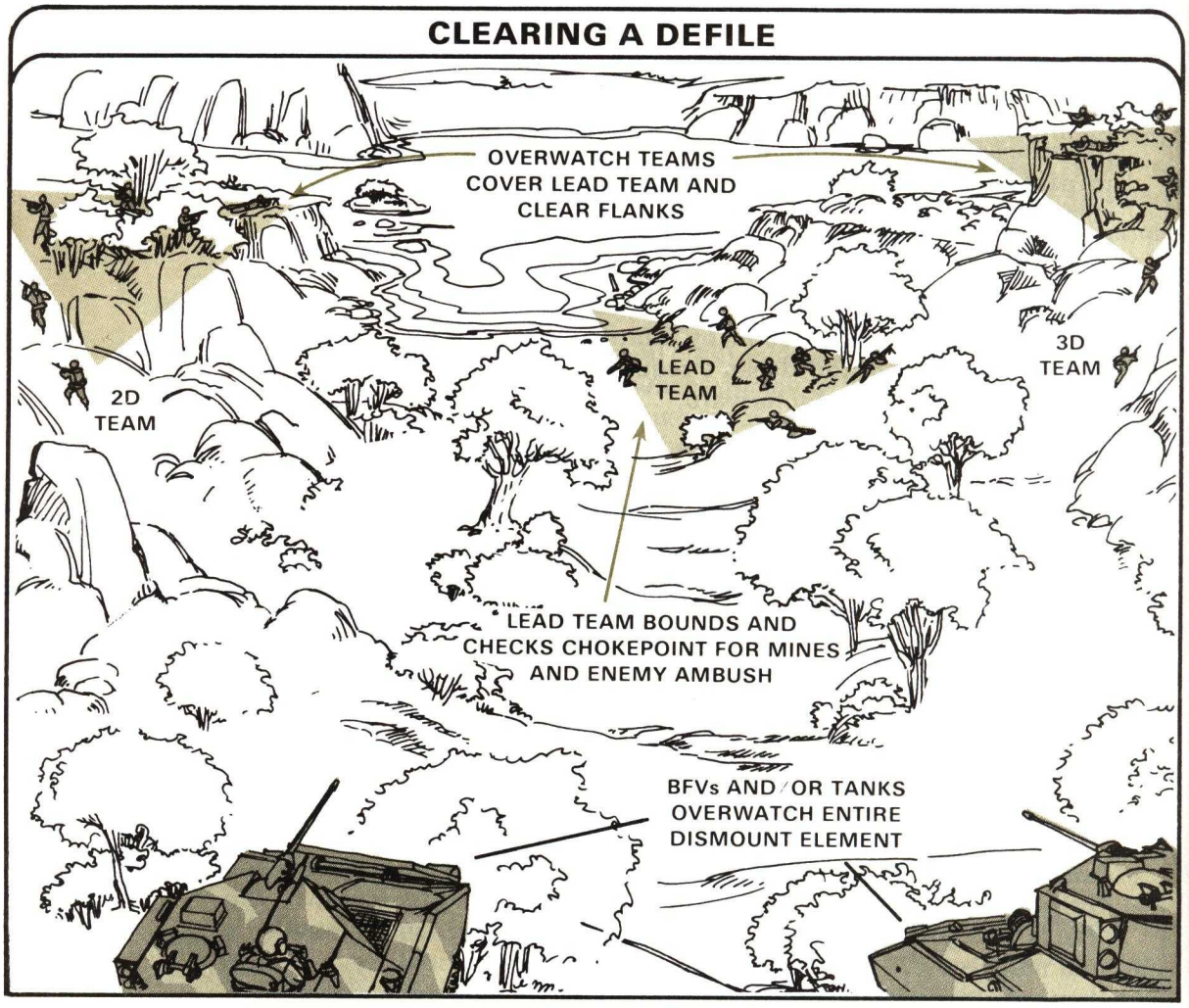
b. One of the major tasks of the lead element is protection of the company or company team from surprise attack. The lead platoon must clear each possible ambush site unless instructed otherwise. These will normally be cleared using platoon and squad drills.

c. When a danger area is encountered that makes an enemy ambush possible, the company team leader makes the determination as to how much risk he will accept. If speed is critical, he may choose to accept a greater risk and not dismount, or he may choose to stay mounted but move forward only a small element. If he has reason to believe that an ambush is likely, then he will probably dismount his infantry.

d. In each situation where dismounted infantry leads BFVs and tanks, the company team commander decides whether tanks or fighting vehicles move directly behind the dismount element. Tanks will normally be preferred because their large main guns and machine guns can deliver immediate, devastating fire, and they have much better armor protection than the BFVs. Regardless of whether tanks or BFVs are designated as the overwatch force, it must be ready, once contact is made, to suppress enemy weapons that endanger the dismounted infantry.

e. A defile is an ideal ambush site. If a defile is encountered that forces the unit to move in single vehicle file for a significant distance, the team might choose to clear with infantry. Common defiles for mechanized units are roads or trails across streams or through swamps and heavy forests. When clearing a defile, each

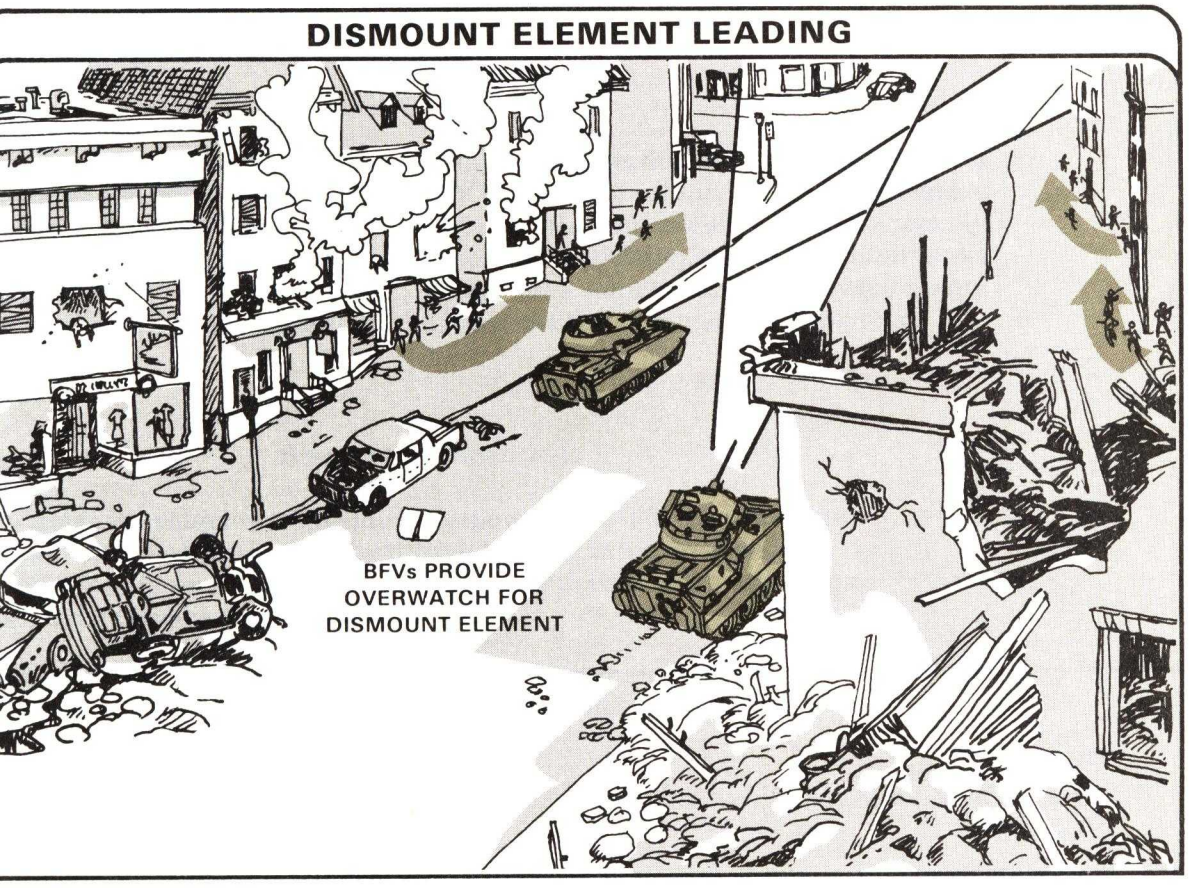
side is cleared far enough from the chokepoint to make sure that there are no ambushes. The surface is checked for evidence of mines. This task usually requires the dismount element to move in a modified wedge formation, with one rifle team forward and one on each flank. Since contact should be expected at defiles, the leading teams use bounding overwatch.


CLEARING A DEFILE
OVERWATCH TEAMS COVER LEAD TEAM AND CLEAR FLANKS
2D TEAM
LEAD TEAM
3D TEAM
LEAD TEAM BOUNDS AND CHECKS CHOKEPOINT FOR MINES AND ENEMY AMBUSH
BFVs AND/OR TANKS OVERWATCH ENTIRE DISMOUNT ELEMENT

f. If a platoon is given the mission of moving along and clearing a road as part of the movement to contact, it must do this with care. The enemy often will lay weapons, mainly antiarmor weapons, on a bend in the road so that they can ambush lead vehicles without trailing vehicles being able to overwatch. A bend in the road and its shoulder may also be mined. Rifle teams must carefully check bends in roads.

A bridge must be considered an obstacle or possible ambush site and approached as such. It must be cleared before it is crossed.

Infantrymen normally dismount to lead through urban areas. Vehicle movement through a village or town is generally limited to streets and infantrymen must clear buildings along the way. The infantrymen move down a street in a modified column formation with rifle squads staggered along the street sides. The infantrymen move alongside the buildings, clearing each building as they advance. As it moves, each team makes sure there are no enemy positions left in the buildings on its side of the street. Each team looks for enemy in the upper floors of the buildings on the other side of the street. Tanks or BFVs provide overwatch.



The key to rapid movement is the ability of the platoon to react quickly to situations that require the unit to dismount and clear danger areas. Through the use of drills, this process becomes almost automatic and consequently can be performed quickly and efficiently.

CHAPTER 5

Offense

Offense is the means by which the attacker carries the battle to the enemy and destroys his will to fight, and the BFV gives the infantry a potent offensive weapon. The BFV has a weapons system — the 25-mm gun — that is primarily designed to kill BMPs beyond 2,000 meters. In addition, the BFV can kill tanks with its TOW at 3,750 meters and nonarmored vehicles and unprotected enemy personnel at 900 meters with its 7.62-mm coaxial-mounted machine gun.

Section I. Capabilities

To add to the vehicle's tremendous firepower, the BFV can shoot on the move, shoot at night, keep up with the M1 tank, and protect its occupants from artillery fragments and machine gun fire up to 14.5-mm (.58 caliber).

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5.1. Employment.

a. The BFV's capabilities allow mechanized infantry with the BFV to be employed offensively:

(1) From long overwatch positions (1,500-3,000 meters) that allow the BFV to suppress enemy BMPs, tanks, and ATGMs at a relatively safe standoff distance.

(2) Suppressing on the move when supporting tanks by following and protecting their flanks and rear from ATGMs, and dismounting infantry when necessary to clear obstacles, ATGMs, enemy dismounted infantry, and maintain the momentum of the tanks.

(3) By separating the BFVs from the infantry and fighting each in such a way as to maximize the capabilities of both (dismounted infantry using restrictive terrain to assault the objective, while vehicles support from long overwatch).

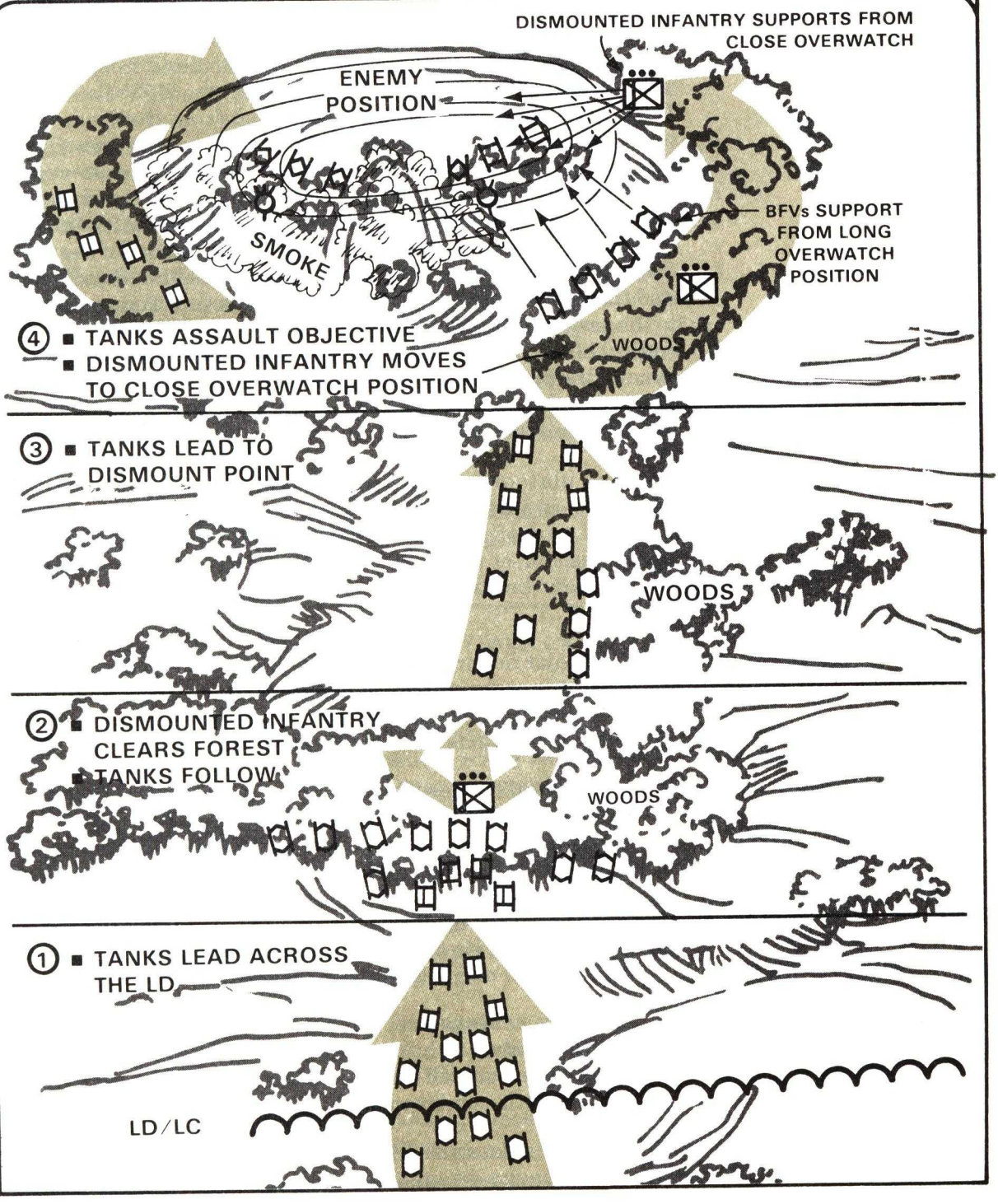
(4) With dismounted infantry in close overwatch (0-500 meters) while tanks and BFVs assault an objective.

b. Despite its increased capabilities, however, the BFV has some limitations that must be considered in its employment. The BFV is not a light tank. Though it is quick and agile with an impressive array of weapons, it does not have the armor protection to allow it to travel around the battlefield like a tank. It must use covered and concealed routes when possible as well as hull-down firing positions. It cannot move across open ground against an entrenched and prepared enemy, or it will be destroyed.

5-2. Basic tactics.

a. Platoons and squads normally conduct offensive operations as part of a company or company team. In a company team, mechanized infantry platoons and squads operate in conjunction with one or more armor platoons. Usually the company team commander specifies a combination of tank and infantry to be used during an operation. For example in a deliberate attack, he may direct that tanks lead across the LD, dismounted infantry lead through a small forest, tanks lead to dismount point, dismounted infantry moves forward on a covered and concealed route and supports a tank assault from close overwatch, and BFVs support from long overwatch.

TANKS, BFV, AND DISMOUNTED INFANTRY OPTIONS



b. Because a BFV will seldom move and fight alone on the battlefield, the tactical focus of Bradley mechanized infantry is at platoon level. Platoons employ drills and tactics; squads execute drills. Employment of the BFV platoon is complicated by the requirement to control two distinct elements: the dismounted troops and the vehicles. Unlike earlier infantry carriers, the BFV element can fight in conjunction with or separated from the dismounted element. This means that although the BFV and its crew fight as one system when mounted, they fight as two separate systems when the rifle team dismounts and moves off on its own mission under the control of the platoon leader. For the squad leader, at the moment of dismount, a change occurs in the control of the squad. Since the squad leader cannot usually control both the rifle team and the vehicle, once separated, he gives control of one or the other to the assistant squad leader. If he stays with the vehicle, he gives control of the rifle team to the platoon's dismount element leader, usually the platoon leader. If the squad leader dismounts, he gives control of the vehicle to the platoon's vehicle element leader, usually the platoon sergeant.

c. Because platoons and squads normally conduct offensive operations as part of a company or company team, their offensive tasks are part of a movement to contact and subsequent hasty attack mission, or as part of a deliberate attack mission. The type of operation the company team will conduct is dictated by the mission.

d. Another major factor that influences the type of operation is how much resistance the unit expects to encounter. The nature of the resistance is a critical part of the "E" in METT-T and as such influences the actions of leaders and options available to them.

(1) **Light resistance.** Enemy squad or platoon-size element defending on the best available terrain feature without combined arms (engineer, artillery) assets. Normally, the force will be made up of two to three vehicles of the same type (BRDM, BMP or tank pure), some AT assets, and positions will not be dug in. The force will usually attempt to hold its position since its mission includes maintaining contact and reporting on our location and disposition.

(2) **Medium resistance.** Enemy of platoon or company-size with individual fighting positions, but not well prepared. The enemy position will be organized around the best defensible terrain with combined arms assets integrated.

(3) **Heavy resistance.** Enemy will have established platoon and company strongpoints. Defense will be echeloned and

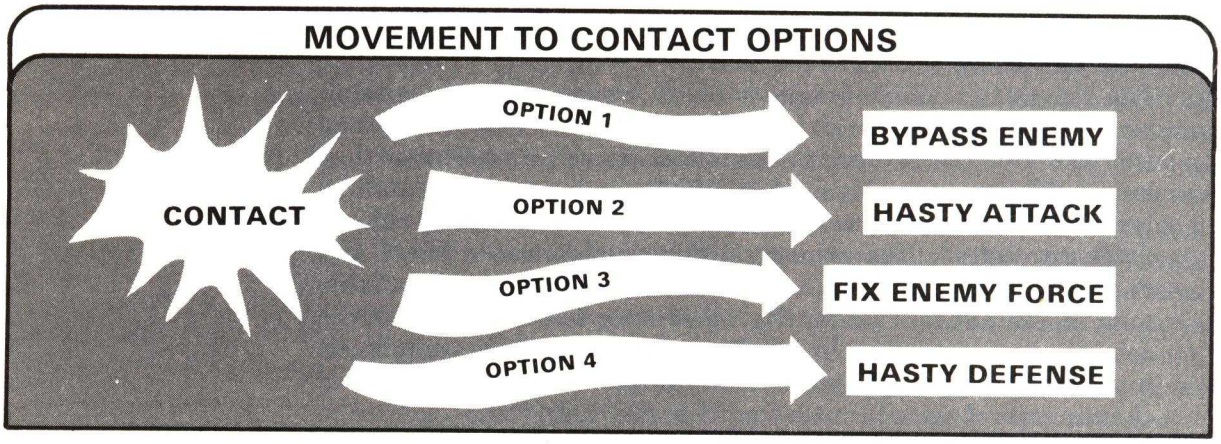
extensive minefields, tank ditches, and wire obstacles will be in place. The defense will have integrated all arms, and heavy artillery fire can be expected. The enemy will have platoon size elements in the security zone forward of the main defensive belt. Units generally will not withdraw or move to alternate positions once the main defensive belt is attacked.

The company team commander plans for his offensive mission based on the mission given to him by his task force commander as well as his own estimate of the situation. His estimate is based (to a large extent) on his analysis of METT-T, and results in one of three types of missions — movement to contact, hasty attack, or deliberate attack. The primary difference between a hasty and deliberate attack is the planning and coordination time available to the commander or leader that allows him to integrate all of the combined arms assets (CAS, indirect fires, EW, smoke, engineer) into his attack plan. Often, a hasty attack occurs as a result of chance or unexpected contact or when the commander chooses to attack quickly before the enemy can use the additional time for his own advantage.

A company team commander may be given either a movement to contact, hasty attack, or deliberate attack mission based on a number of tactical factors.

MOVEMENT TO CONTACT LIKELY WHEN	HASTY ATTACK LIKELY WHEN	DELIBERATE ATTACK LIKELY WHEN
• Limited information on the enemy • Fluid situation following initial contact • The enemy has chosen to break contact	• A chance enemy contact is made and little time is available for attack planning • Enemy situation is unclear • Enemy resistance is expected to be light to medium • Company team is trying to maintain the momentum • After a successful defense	• Ample time is available for planning and coordinating an attack • Enemy situation is known • Heavy resistance is expected • A hasty attack has failed

g. The movement to contact is both a flexible and a complex mission. Because intelligence on the enemy is limited, plans must allow for adjustments and unexpected contact. There are, however, multiple options present to the company team commander and platoon leader in this situation once contact is made.



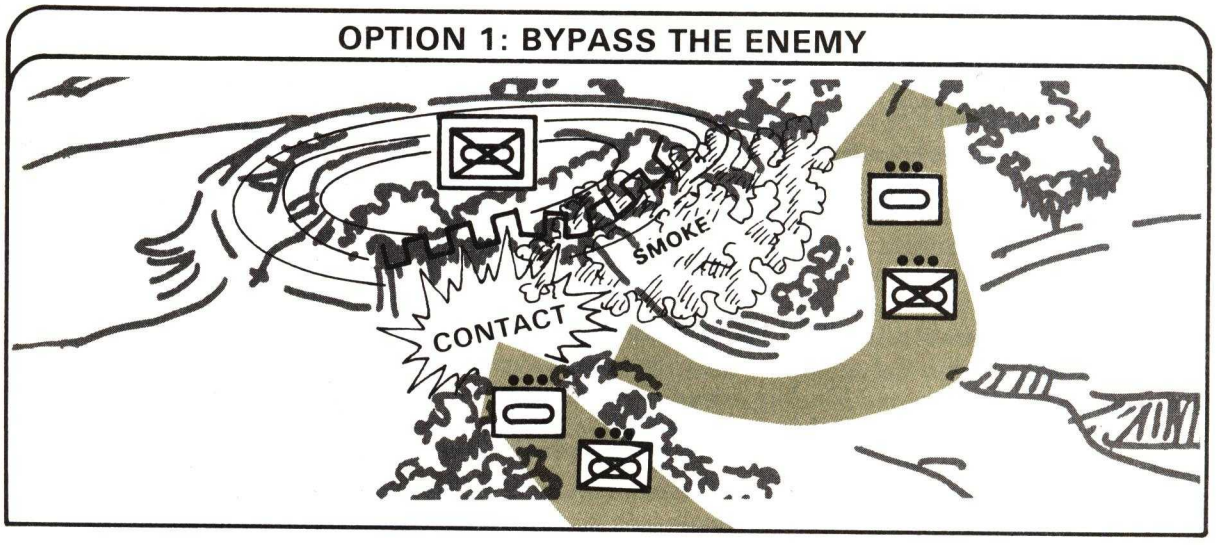
(1) **Bypass the enemy.** When the mission calls for light resistance to be bypassed or when directed by the company team commander after contact is made, the actions of the combined arms team are:

(a) Tanks suppress on the move.

(b) BFVs suppress on the move.

(c) Infantry remains mounted.

(d) Platoon leader calls for indirect fire and smoke to screen his movement past the enemy position.

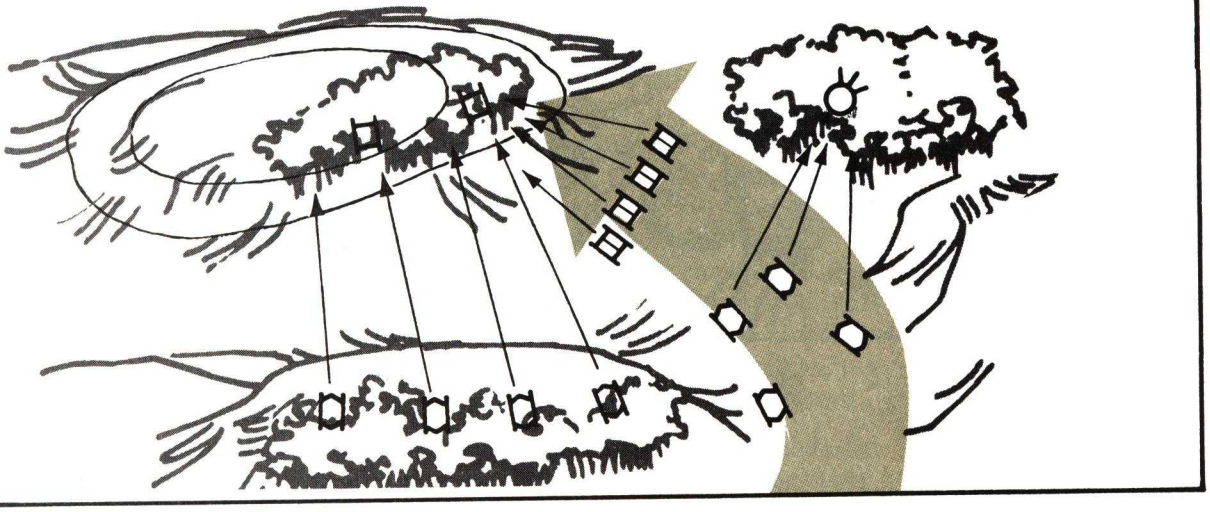


(2) **Conduct a hasty attack.** When resistance is light to medium and the mission calls for enemy to be cleared or enemy resistance to be eliminated, the actions of the combined arms team are:

(a) When resistance is light:

- Tanks assault and attempt to overrun resistance.
- BFVs provide long overwatch or follow tanks and support on the move, especially against enemy ATGMs.
- Platoon leader calls for indirect fires to suppress the enemy position.
- Infantry remains mounted unless the enemy must be cleared from restrictive terrain, or infantry may dismount and clear the objective from the rear, if necessary.

OPTION 2: HASTY ATTACK (ASSAULT & OVERRUN)

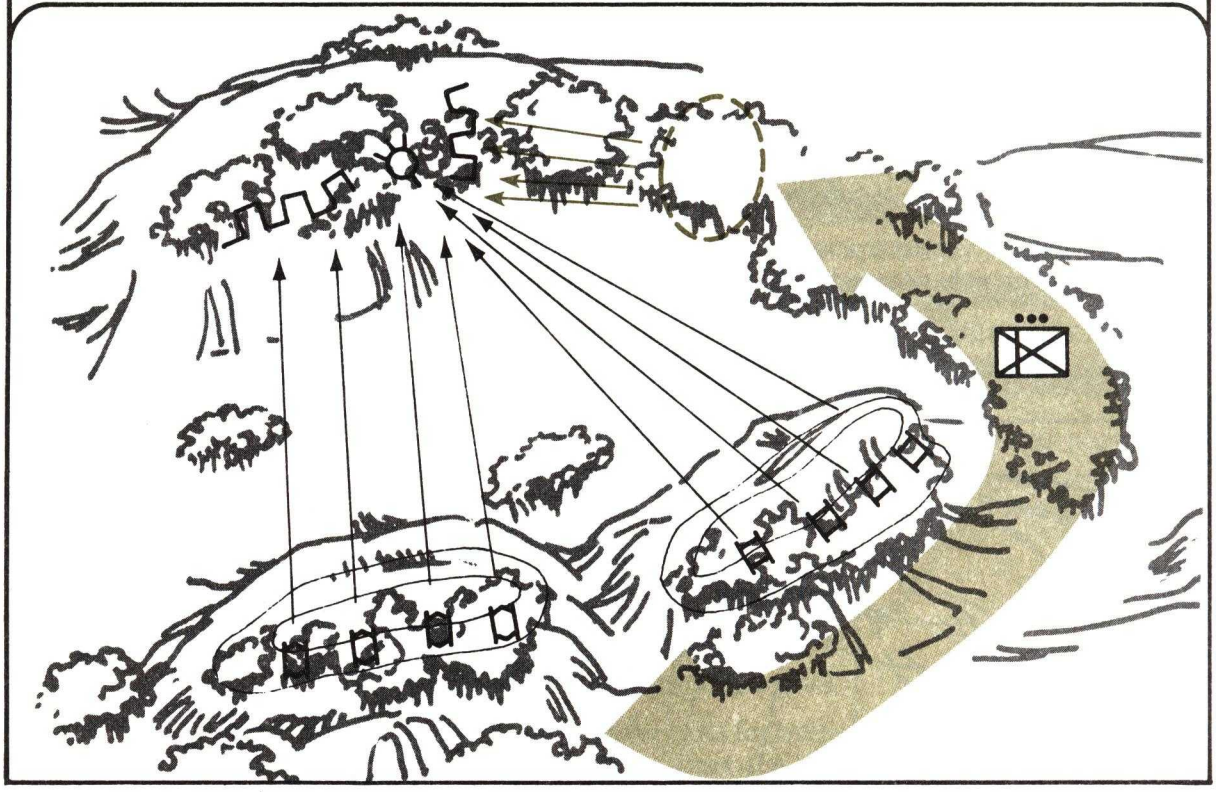


(b) When resistance is medium:

- Tanks suppress enemy from overwatch positions or maneuver against enemy positions if a trafficable, covered and concealed approach is available.
- BFVs suppress enemy from long overwatch positions or accompany tanks and suppress on the move.
- Platoon leader calls for indirect fires to suppress the enemy position and smoke to screen the movement of the dismounted element if necessary.

- Infantry dismounts and uses a covered and concealed approach to a position near the enemy from which it can assault or provide close overwatch in conjunction with an assault by tanks or BFVs.

OPTION 2: HASTY ATTACK (DISMOUNT ELEMENT CLOSE OVERWATCH)



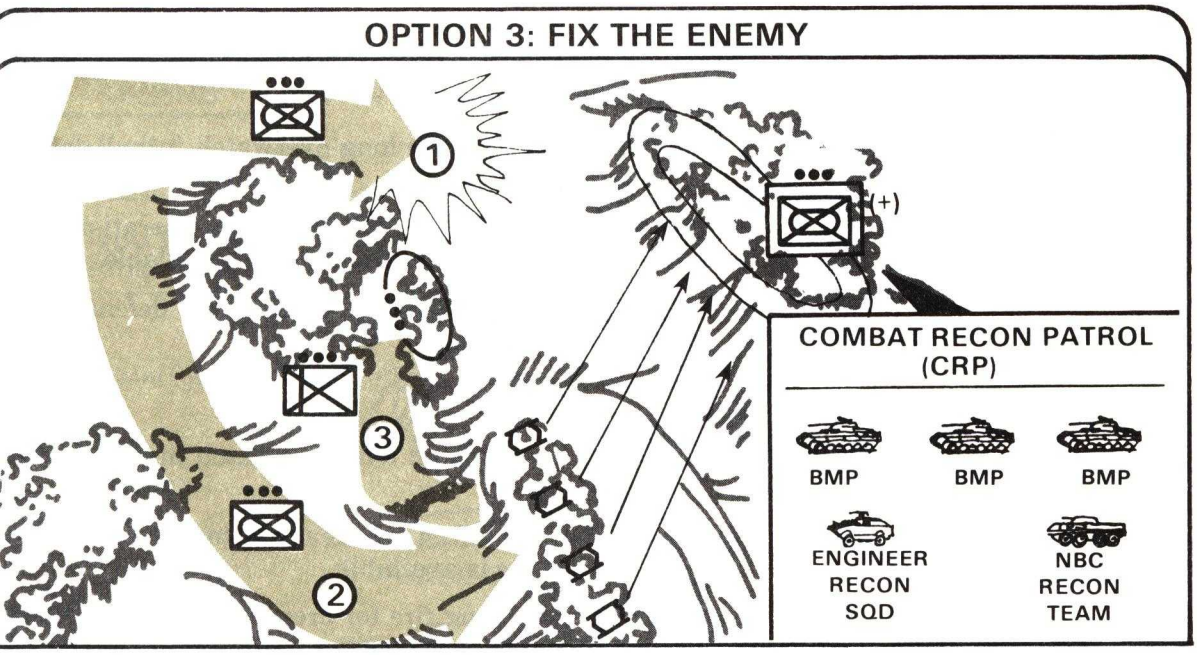
(3) **Fix the enemy.** Fixing the enemy involves establishing an overwatch position from which the enemy is suppressed and kept from withdrawing any part of his force for use elsewhere. When resistance is heavy and the enemy appears to be too strong to assault, or a hasty attack has failed, the actions of the combined arms team are:

(a) Tanks suppress the enemy from long overwatch in hull-defilade positions.

(b) BFVs suppress from long overwatch in hull-defilade positions.

(c) Infantry dismounts to protect BFVs from ground attack or to secure a dismounted avenue of approach.

(d) The platoon leader calls for indirect fires to help in the suppression effort.



(4) **Hasty defense.** In some situations, a unit conducting a movement to contact will make contact with an enemy unit much larger and more powerful. If the BFVs surprise a larger unit and if the terrain gives the platoon an advantage, it should attempt to fix the enemy force, thereby allowing the rest of the company team to maneuver against the force. If the enemy is too powerful, the platoon may be forced to assume a hasty defense to keep from being overrun by the enemy. The hasty defense option should be used only if the platoon is in danger of being overwhelmed, because the hasty defense surrenders the initiative to the enemy and means that he has fixed your platoon. In the hasty defense, the BFV platoon:

(a) Keeps the company team commander informed and continues to report on the enemy strength, dispositions, and actions.

(b) Dismounts infantry to secure BFVs or cover dismounted avenues of approach in preparation for the enemy's hasty attack.

. The deliberate attack occurs when more time is available for planning and coordination and enemy resistance is expected to be heavy. Reconnaissance is used to get as much information on enemy strength and location as possible. All elements of the combined arms team are carefully integrated (BFVs, tanks, artillery, helicopters, CAS) into the plan for attack. The possibility for conducting a night attack is considered.

i. In the deliberate attack, the components of the combined arms team operate as follows:

(1) **Tanks:**

(a) Suppress enemy from long overwatch in hull-defilade positions.

(b) Provide supporting fire for breaching operations from close overwatch positions if cover is available.

(c) Overrun enemy positions, destroy his defenses, and exploit the breach.

(2) **BFVs:**

(a) Suppress enemy from long overwatch in hull-defilade positions.

(b) Transport infantry to breach site if covered and concealed route is available.

(c) Provide supporting fire for breaching operations from close overwatch positions if cover is available.

(d) Exploit with tanks after breach has been made.

(3) **Infantry:**

(a) Dismounts.

(b) Conducts reconnaissance of enemy positions.

(c) Assists in breaching operations by conducting the breach or providing close overwatch and security for the breaching element (for example, engineers, mineplows).

(d) Passes tanks through the breach to maneuver against the enemy.

(e) Leads tanks through restrictive terrain on the far side of the breach.

(f) Assaults with tanks to secure the objective.

(g) Clears enemy trench lines.

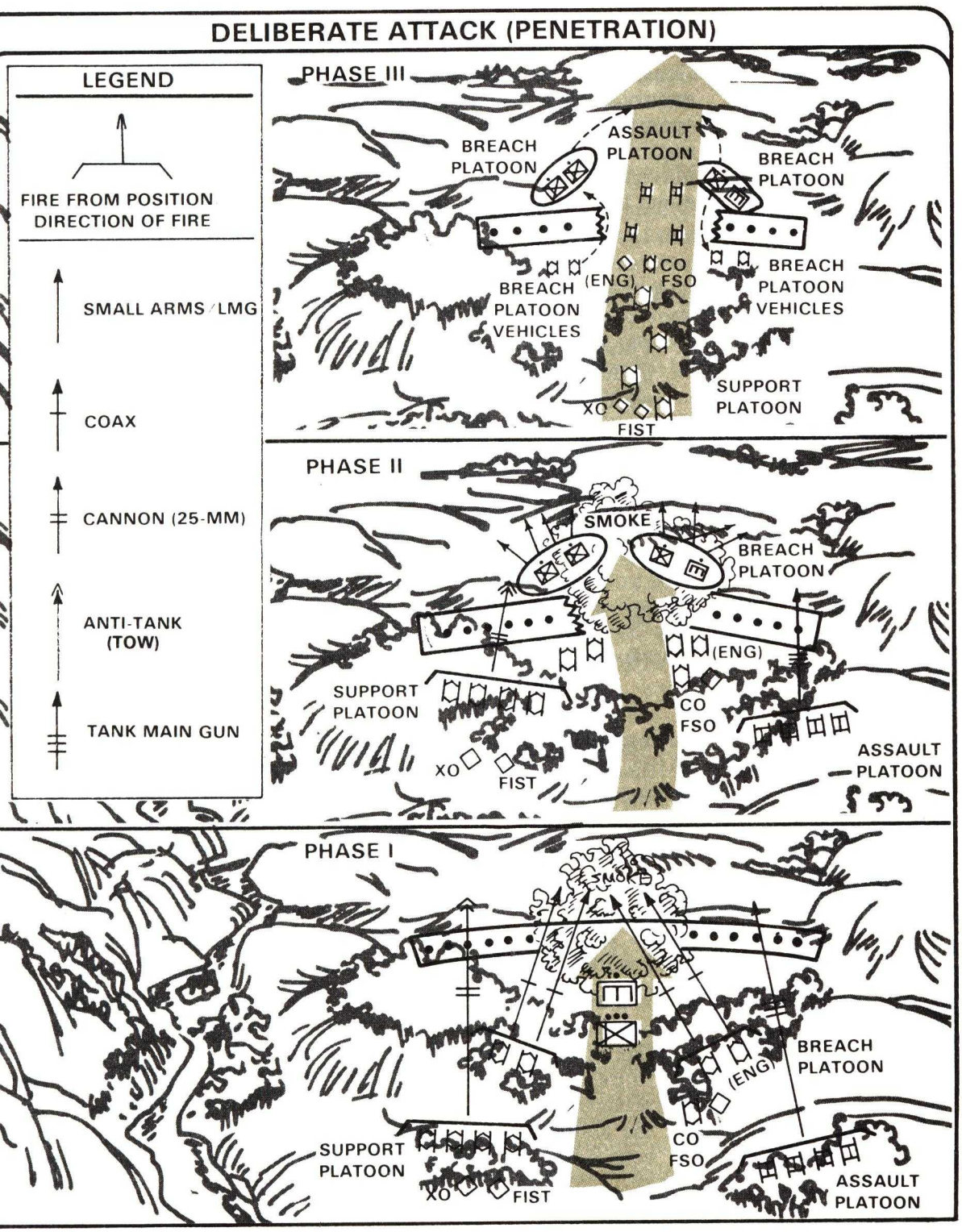
(h) Remounts BFVs to continue the attack.

(4) **Indirect fires:**

(a) Planned in detail.

(b) Carefully integrated (artillery, mortars, CAS, attack helicopters).

(c) Matched to scheme of maneuver.


DELIBERATE ATTACK (PENETRATION)
LEGEND
FIRE FROM POSITION
DIRECTION OF FIRE
SMALL ARMS/LMG
COAX
CANNON (25-MM)
ANTI-TANK (TOW)
TANK MAIN GUN
PHASE III
BREACH PLATOON
ASSAULT PLATOON
BREACH PLATOON
BREACH PLATOON VEHICLES
(ENG)
CO
FSO
BREACH PLATOON VEHICLES
SUPPORT PLATOON
XO
FIST
PHASE II
SMOKE
BREACH PLATOON
(ENG)
SUPPORT PLATOON
CO
FSO
ASSAULT PLATOON
XO
FIST
PHASE I
SMOKE
BREACH PLATOON
(ENG)
SUPPORT PLATOON
CO
FSO
ASSAULT PLATOON
XO
FIST

Section II. Movement to Contact

Generally, when a unit is moving toward but not in contact with the enemy, it is conducting a movement to contact. Many offensive operations begin with a movement to contact. Its purpose is to gain or regain enemy contact and to develop the situation to conduct an attack. Movement to contact is usually characterized by limited information about the enemy.

5-3. Missions.

a. Platoons and squads participate in a movement to contact as part of the company or company team using the movement techniques explained in Chapter 4. The lead platoon in the movement to contact has several critical tasks to perform. These missions are:

   (1) Protecting the company or company team from a surprise attack by providing early warning of enemy positions and obstacles.

   (2) Assisting the forward movement of the company or company team by removing obstacles or finding routes around them.

   (3) Defeating enemy forces within the platoon's ability.

   (4) Developing the situation rapidly once contact is made by assessing the situation and sending a spot report to the team commander.

b. The remaining platoons within the company or company team are assigned missions and positions within the formation based on the movement techniques being used. Their missions normally include overwatching the lead platoon and reacting with fire and/or movement once contact is made.

5-4. Planning.

a. A platoon normally moves as part of a company team along an axis of advance. An axis of advance provides the platoon leader flexibility to move his BFVs as necessary to bypass obstacles or impassable terrain. The axis also allows the platoon to move according to the commander's intent. The exact route selected by the platoon leader must keep the platoon oriented and allow the company or company team to move with minimum difficulty.

b. Because the platoon leader does not know when or where he will make contact with the enemy, he should avoid mounted movement

on terrain such as draws, ravines, narrow trails, or steep slopes that restricts movement. In addition, the platoon leader must also consider the speed at which the commander expects him to advance and select his route accordingly.

A line of departure, phase lines, and checkpoints are normally assigned to control and coordinate the forward movement of the company or company team. The platoon leader may be required to report the crossing of phase lines to the company or company team commander, but the platoon does not stop at a phase line unless told to do so. If necessary, the platoon leader may designate additional phase lines or checkpoints for internal platoon use to reduce the number and length of orders to control movement.

Fire control and distribution is accomplished through the use of boundaries, fire plans, pyrotechnics, and weapons-ready posture. It takes on added importance in the movement to contact because of the scarcity of information about the enemy. The weapons-ready posture must not only be flexible enough to respond to an unclear enemy situation but also varies between the bounding and overwatching elements. It is critical in BFV units because of the variety of weapons that can be controlled from the turret and dangers of expending all of the on-board ammunition of a weapon within the platoon.

(1) The overwatching element should consider erecting their TOWs and performing the self-test although not all will be designated to fire. The platoon leader should also designate which vehicles will prepare 25-mm HEI-T, APDS, and 7.62-mm coax.

(2) If restrictive terrain dominates the route, the bounding element may not have the same fields of fire as the overwatching element and may be less capable of employing its TOWs. Once again, the leader should designate which vehicles will be prepared to fire the various weapons and types of ammunition.

Fire planning is crucial in the movement to contact because the enemy situation is often poorly defined and the place where contact will occur is unknown. The FO is the principal assistant to the platoon leader in fire planning. Platoon leaders should plan fires along the entire route, specifically at possible contact points (key terrain, choke points) and on identifiable terrain features to aid in shifting fires.

f. The platoon leader must ensure that his FO coordinates and updates the fire plan with the FSO at company team level. If this is not done, a platoon leader who makes contact may not utilize all the fires that the company team has made available to him.

g. Air guards are especially critical in a movement to contact. If the cargo hatch is open, an air guard can be designated to watch to the sides and rear — front view is blocked by turret. The Bradley commander in one or more of the BFVs will have to act as an air guard oriented to the front.

h. Once contact is made with the enemy, the platoon should not break contact unless ordered to by the company commander. Additionally, the platoon leader should develop the situation by gathering and reporting critical information about the enemy and recommending a course of action.

5-5. Actions on Contact.

When a platoon makes contact, it must react quickly and aggressively using battle drills. The platoon's actions in the first few seconds after contact may determine whether a battle is won or lost. Those actions must include several initial moves that occur almost simultaneously: *return fire, deploy, report.* The platoon leader must then:

a. **Develop the situation.** The platoon leader should act quickly to determine the enemy's strength, composition, and disposition. He may call for indirect fire support and use fire and movement to develop the situation. In doing so, he should attempt to overrun the position if enemy resistance is weak. He should not expose his BFVs needlessly. The rifle teams normally remain mounted so the platoon can move without delay. The degree of resistance and type of enemy fire influence the platoon leader's recommendation to the company or company team commander on a course of action to be taken.

b. **Choose a course of action.** Based on his observation of the enemy, the platoon leader can recommend several actions if the enemy force cannot be overrun.

(1) **Bypass.** If the enemy does not present a meaningful threat and bypass routes are available, the platoon leader does not allow light enemy resistance to slow forward movement unless it poses a threat to the rest of the company team.

(2) **Conduct a hasty attack.** If the enemy resistance is light, he can recommend a hasty attack to destroy the enemy force. He

normally does not attack unless the team commander approves, but may choose to overrun very light resistance if his mission orders indicate so.

(3) **Fix and suppress.** If there is strong enemy resistance and the platoon cannot move, the platoon leader can have the platoon's fires fix and suppress the enemy. This is done using direct and indirect fires to hold the enemy in position while the rest of the company or company team moves to conduct a hasty attack, uses engineers to breach obstacles, or bypasses. To fix the enemy, the platoon leader deploys his vehicles and possibly his infantry and assumes an overwatch position to take the enemy under fire and limit the enemy's ability to maneuver.

. **Report.** As soon as the platoon leader has reached a protected position, he should pass to the company commander all he knows about the enemy. Once the platoon leader has developed the situation and decided on a course of action, he updates his earlier report to the commander. In some cases, the commander may change the platoon leader's plan.

REPORT CHART

SIZE

The size of the enemy unit is the number of troops you see. For example, report ten enemy infantrymen, not an infantry squad; or three enemy tanks, not an enemy tank platoon.

ACTIVITY

Report what you saw the enemy doing — for example, "Manning an ATGM position."

LOCATION

Report where you saw the enemy. If you have a map, report the coordinates — for example, "GL 874461." If you do not have a map, relate the location to some key terrain feature — for example, "On the Hann Road 200 meters south of the Kell River Bridge."

UNIT

The unit to which an enemy soldier belongs may be difficult to determine. Report bumper markings on vehicles. Some armies have particular uniforms, headgear, and colored tabs on uniforms that identify the type unit. The unit's action may indicate its type, or the kind of equipment observed may be peculiar to a specific type of unit. For example, a light, armored vehicle may indicate a reconnaissance unit.

TIME

Report the time when you saw the enemy activity, not the time you report it.

EQUIPMENT

Report the equipment the enemy is wearing or using.

Section III. Hasty Attack

Attacks are conducted to destroy or capture an enemy force and to secure key terrain. An attack can be either hasty or deliberate. The basic difference between these two types of attacks is dictated by the amount of time available for detailed planning and preparation. Hasty attacks are more common in movement to contact situations and are executed quickly using squad and platoon drills.

5-6. Options.

When contact is made and the decision is to conduct a hasty attack, the platoon leader has two options. He can attack mounted or dismounted. In most cases, the decision as to whether or not to dismount will be made after informing the company team commander of the situation and with his approval, although in some quickly developing situations the platoon leader may make the dismount decision himself.

a. **When to attack mounted.**

(1) Because the BFV is not heavily armored, the decision to remain mounted for the hasty attack is a critical one. The key considerations governing the decision whether or not to remain mounted are:

(a) Orders from the company team commander.

(b) Degree of enemy resistance (light).

(c) Trafficability (good without too much open exposure).

(2) If tanks are also participating in the hasty attack, they will normally lead and the BFVs will follow 200 to 400 meters to their rear suppressing known or suspected enemy ATGM positions and protecting the tanks from dismounted enemy AT teams. They will dismount only if the tanks to their front require an area to be cleared or if an ATGM position to the flank must be reduced to maintain the momentum of the attack. Some degree of risk must always be accepted when attacking mounted.

(3) If tanks cannot lead because of the enemy threat, then it will not be prudent to attack mounted with BFVs either.

(4) The decision to attack mounted without tanks should only occur with a BFV pure force against extremely light resistance or when terrain precludes attacking with tanks.

(5) Once the decision is made to conduct a mounted hasty attack, the Bradley platoon leader must still be prepared to dismount if resistance stiffens, trafficability turns out to be poorer than

anticipated, or an unexpected threat emerges that can best be dealt with by dismounted infantry.

When to attack dismounted.

(1) The decision to conduct a dismounted hasty attack is critical because it is inherently slower than attacking mounted and might give the enemy time to stiffen his defenses. Additionally, it might cause the momentum of the movement-to-contact operation to be lost. The key considerations governing the decision whether or not to dismount are:

(a) Orders from the company team commander.

(b) Degree of enemy resistance known or expected (medium).

(c) Amount of restrictive terrain.

(d) Significant ATGM threat.

(2) As the degree of enemy resistance increases and especially as the ATGM threat increases, the ability to attack mounted decreases. Tanks are capable of maneuvering against medium resistance because of their armor protection, but BFVs will primarily conduct long overwatch support for the dismounted element in those situations.

(3) The same is true with restrictive terrain. Forests, ravines, and built-up areas are ideal locations for enemy ATGM, both mounted and dismounted. Dismounted infantry should be used to conduct the hasty attack unless intelligence indicates that the enemy has little or no AT capability — an unusual situation.

(4) The selection of a dismount point requires that leaders make a map reconnaissance before the operation, and monitor the terrain as the unit passes through it. This is especially important as the unit approaches and passes through close terrain. If the platoon is required to dismount, the vehicles should move to a dismount point:

(a) That is as far forward as possible.

(b) Where vehicles can be close enough to one another to facilitate forming the platoon.

(c) Where vehicles are out of the direct fire line and indirect fire impact area.

(d) Where vehicles have some cover or concealment.

(5) A dismount that is not preplanned is considered a hasty dismount. It usually occurs when the unit takes effective fire and cannot proceed without having the enemy cleared. To conduct a hasty dismount, the platoon leader:

(a) Receives orders or makes the decision himself to dismount.

(b) Quickly scans the area to select a likely dismount point.

(c) Directs his driver and his platoon sergeant to move quickly to that point (wingmen follow).

(d) Alerts the rifle teams to prepare for dismount.

(e) Occupies the hasty dismount point, forming the platoon into a security perimeter.

(f) Verifies that the dismount point is suitable.

(g) Orders the dismount and forms the platoon.

(h) Leaves instructions with the platoon sergeant (vehicle element leader) on whether or not to move and how to support the operation (normally the BFVs will move to an overwatch position where they can support by fire).

(i) Issues a hasty FRAGO to the dismounted platoon and moves out.

(6) Once the infantry has dismounted, the BFVs move to an overwatch position where they can support by fire. In cases where long overwatch is possible, the BFVs move farther to the rear to take advantage of their standoff ranges. In other cases, the terrain may require that they overwatch from a closer position.

c. **Overwatch.**

(1) When the company or company team is using bounding overwatch, the overwatch force (normally at least one platoon) must be ready, once contact is made, to suppress enemy weapons that endanger the bounding force.

(2) When a Bradley commander or gunner in an overwatch position spots an antitank gun or ATGM fired, or in position to fire, he immediately opens fire with the 25-mm gun (using HEI-T) on the weapon's position, or he fires at the base of the smoke trail or at the gun flash, and gives the warning over the radio.

(3) When the company or company team is using traveling overwatch, the overwatch platoon quickly fires on the enemy from covered firing positions. It avoids moving into areas

where it may be caught by enemy fire directed at the lead platoon or fire that prevents it from moving toward the enemy. The platoon remains mounted to reduce vulnerability to enemy indirect fire and to allow it to move quickly. The platoon continues enemy suppression until the lead platoon reaches covered positions. The overwatch platoon then engages only clearly identified targets or areas designated by the company or company team commander.

-7. Maneuver.

Maneuver is the movement of forces supported by fire to achieve a position of advantage over the enemy. It consists of two actions that take place at the same time. The base-of-fire element covers a moving force by firing at the enemy position and by employing indirect fires. The moving force moves forward to close with the enemy or to reach a better position from which to fire at the enemy. Depending on the distance to the enemy position and the amount of cover and concealment available, the base-of-fire element and the moving force may switch roles as needed to continue maneuvering. Before the moving force advances beyond the supporting range of the base-of-fire element, it takes a position from which it can fire on the enemy, and the base-of-fire element becomes the moving force.

FIRE AND MOVEMENT (MANEUVER)

a. **Mounted**

(1) The company commander may have one platoon support by fire while another platoon moves. The moving platoon uses covered and concealed routes and the traveling technique. The support-by-fire platoon occupies dominating positions and suppresses the enemy.

(2) The support-by-fire platoon will suppress known or expected enemy positions two to three kilometers away. Their main task is to provide fire to keep the enemy's head down, to kill dismounted infantry and thin-skinned vehicles, and to destroy antitank weapons systems. To suppress enemy positions as well as destroy point targets, 25-mm fire should be used. If the overwatch position is within 900 meters of the target, the 7.62-mm coax can be used for suppression of dismounted personnel.

(3) When the situation forces the platoon's fighting vehicles to move under fire, the fighting vehicles generally work in pairs using the wingman concept. Two vehicles (one pair) support by fire, while the other two move. The wingman generally follows to the flank and rear of his leader (platoon leader or platoon sergeant) and provides security for that leader while also engaging targets of opportunity that are acquired while on the move.

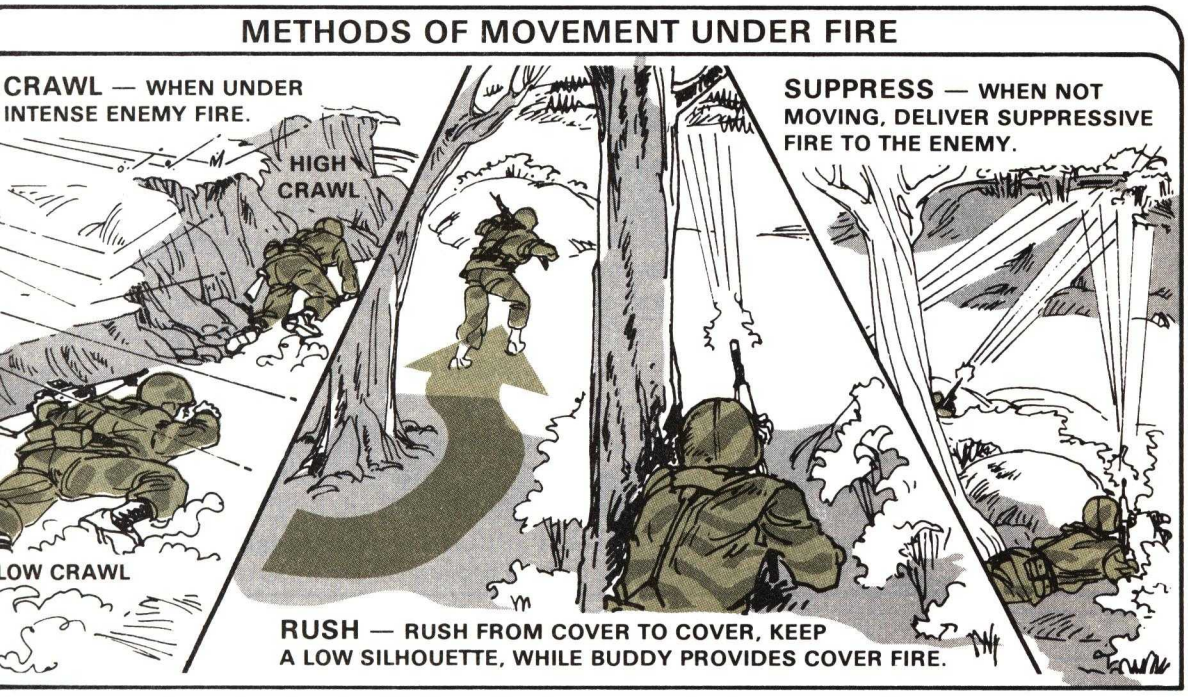
(4) When the commander travels with the moving platoons, the company executive officer (2IC) may be positioned with the support-by-fire platoon to coordinate the employment of direct and indirect fires to fit the scheme of maneuver established in the operation order.

b. **Dismounted.**

(1) How members of a rifle team move depends on the intensity of enemy fire. Crawling may be called for when a moving dismount element faces intense fire and there is little cover. Soldiers use the low or high crawl depending on the situation, the requirement for speed, and the example of their leader. Progress is slow here, but exposure to enemy observation and fire is reduced. When not moving forward, the individual infantryman delivers suppressive fire on the enemy. If necessary, infantrymen may advance all the way into and through positions by crawling.

(2) Short rushes from covered position to covered position may be used when enemy fire allows brief exposure. Rifle teams, two-man teams, or individuals may advance by short rushes to avoid accurate enemy fire. Soldiers should not stay up

longer than three to five seconds. Thus, the enemy does not have enough time to "track" with automatic weapon fire. The rule is: Rush from cover to cover, keeping a low silhouette.


METHODS OF MOVEMENT UNDER FIRE
CRAWL — WHEN UNDER INTENSE ENEMY FIRE.
HIGH CRAWL
LOW CRAWL
SUPPRESS — WHEN NOT MOVING, DELIVER SUPPRESSIVE FIRE TO THE ENEMY.
RUSH — RUSH FROM COVER TO COVER, KEEP A LOW SILHOUETTE, WHILE BUDDY PROVIDES COVER FIRE.

8. Techniques of fire.

The base-of-fire element uses its fire to cover and protect the advance of the moving force. Whenever possible, the base-of-fire element should move undetected into a firing position. A high volume of surprise fire has a greater effect than fire delivered from a known position.

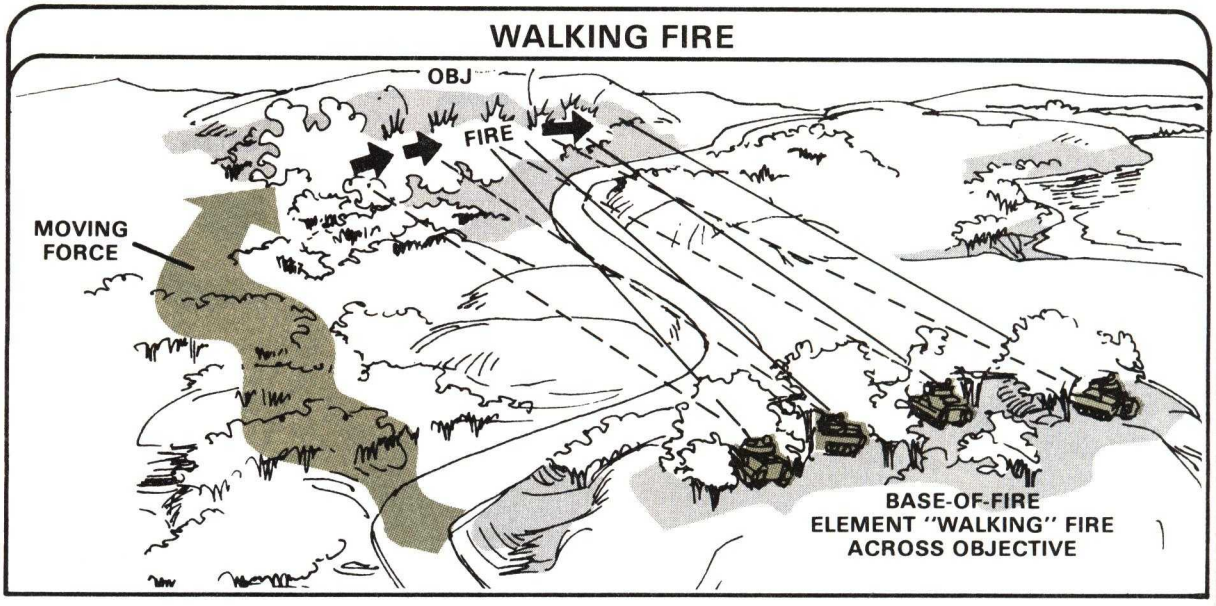
When the base-of-fire element is in position, the following usually takes place:

(1) A heavy volume of fire is placed on the enemy position to destroy or suppress it.

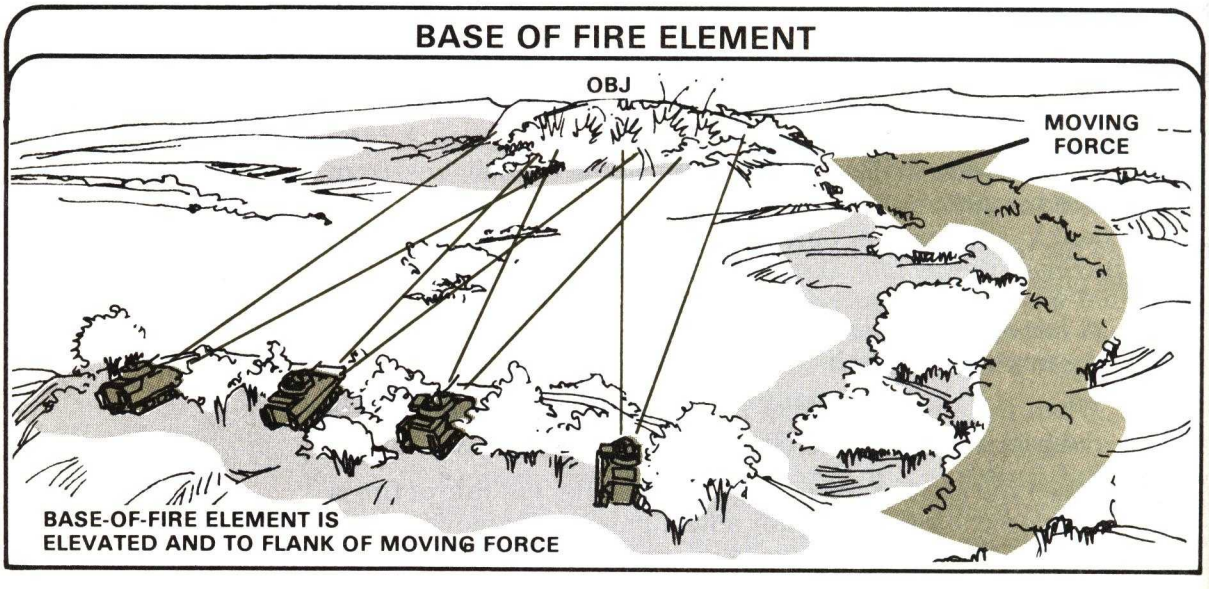
(2) When the enemy position is suppressed, the rate of fire is reduced. However, suppression continues.

(3) When the moving force nears its objective, the rate of fire is increased to keep the enemy down. This lets the moving force assault the position before the enemy can react.

c. Either on signal or when the assault begins, the base-of-fire element will cease fire, shift its fire to another target area, or, more desirably, "walk" its fire across the objective in front of the moving force and then shift beyond the objective, or cease its fire.



d. Positions for the base-of-fire element should be selected so that the moving force does not mask the supporting fires. For this reason, selected base-of-fire element positions are often elevated and to the flank of the moving force. The moving force should neither mask the fire of the base-of-fire element nor move outside its protection.



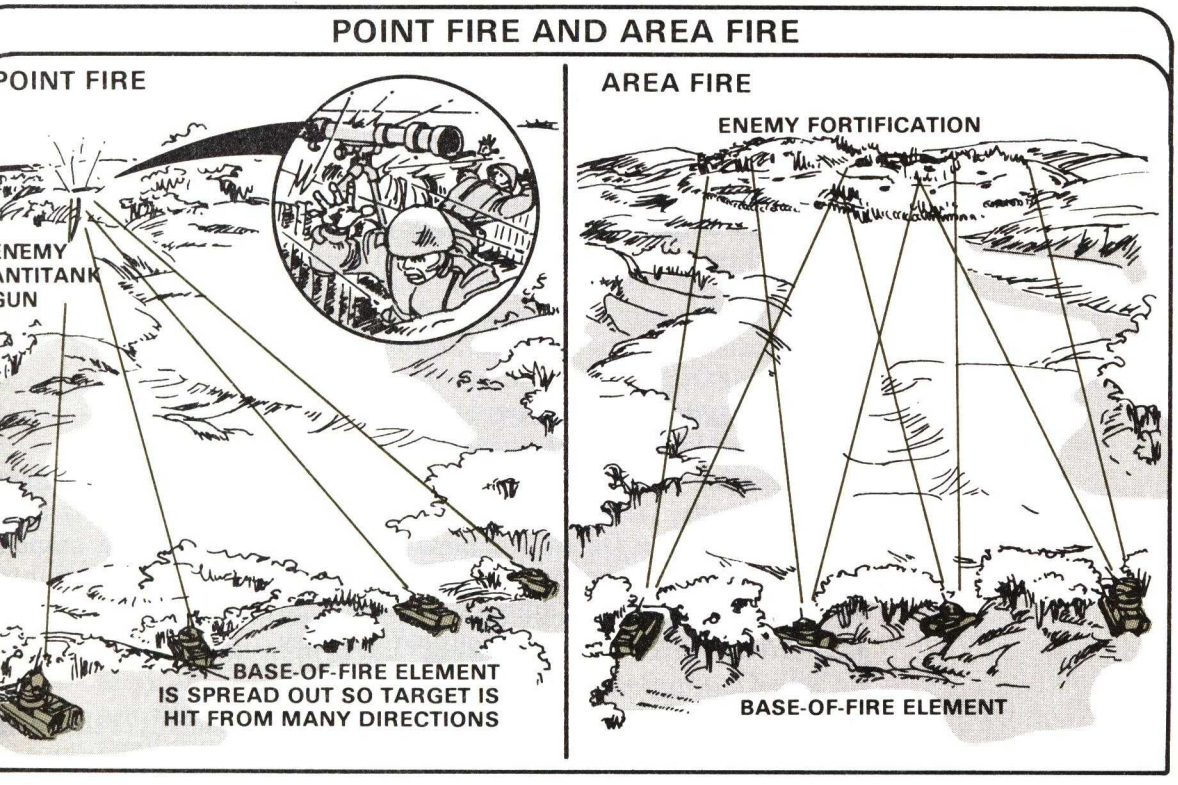
Effective fire on the enemy is the key to forward movement. Fires are directed at destroying or suppressing the enemy. Suppressive fire is placed on the enemy to keep him from firing effectively at the moving force.

The base-of-fire element can concentrate or distribute its fire. In either case, the fire must be controlled. The fire must be effectively directed at the enemy and not endanger the moving force.

There are two types of fire that the base-of-fire element can deliver in support of the moving force.

(1) **Point fire.** Point fire is directed against a specific identified target, such as a machine gun or ATGM position. All weapons are fired at the target. Spreading out the base-of-fire element fires aids in point fire because the fire is directed from multiple directions. Point fire is not often used, since the platoon seldom encounters a single, clearly identified enemy weapon.

(2) **Area fire.** Area fire is distributed over a larger area when enemy positions are more numerous or less obvious. Each weapon or BFV in the base-of-fire element is given a specific sector of the target area to fire into. This is done to ensure that the entire target area is covered by fire and observation.



h. When the fighting vehicle element is the base of fire, the platoon sergeant will mark or identify the target area by oral order or by tracer fire. Each of the three remaining fighting vehicle crews takes one-third of the target area corresponding to its position in the base-of-fire element — left, middle, or right. The platoon sergeant will not take a specific part of the target area. He will observe and control the fire of the other three vehicles and fire at targets of opportunity. However, the terrain may force the platoon sergeant to cover a specific part of the objective.

i. Fire is distributed in width and depth to keep all parts of the target under fire. Fire is placed on likely enemy positions rather than into a general area. Each BFV gunner and dismounted infantryman fires his first shot on that part of the target that corresponds to his relative position in the base-of-fire element. For example, if he is left of his leader, he fires left of his leader's tracers. He then distributes his remaining shots several meters right and left and front and rear of his first shot.

j. When a Dragon is in the base-of-fire element, the antiarmor specialist stays under the squad leader's direct control. He fires the Dragon at important targets only, such as enemy armored vehicles and key weapons. The platoon leader may keep one of the rifle team's Dragons under his direct control. In the absence of appropriate Dragon targets, the antiarmor specialists will fire their rifles.

k. Area fire permits the base-of-fire element to rapidly cover an entire target area, even if the enemy cannot be seen. Area fire is the quickest and best way to bring all parts of a target under fire.

5-9. Assault techniques.

If destruction of the enemy is required, it may be done either by fire or close assault. Destruction by fire is preferred because it takes advantage of the BFV's weapons systems and their long standoff ranges. Destruction by fire limits the exposure of dismounted personnel to the enemy's fires and allows the platoon leader to better protect and conserve his dismounted infantry.

If destruction cannot be accomplished by fire, an assault of the enemy position may be required. If the enemy resistance is light or medium, an

nmediate attempt should be made to locate a part of the defenses that re either incomplete or weak.

. **Assaulting mounted.**

(1) When resistance includes little or no antitank defenses, the platoon may be directed to attack mounted. If tanks are available, the assault is capable of overcoming heavier resistance. If tanks are not available, a mounted assault should be attempted only against light resistance.

(2) The mounted assault should be done with tanks leading and BFVs supporting on the move. The BFVs should orient their turret weapons on ATGM and dismounted targets that could slow the tanks. Firing port weapons should be manned to ensure a high volume of suppressive firing during the assault. As the BFVs assault over the objective, care must be taken to ensure the bypassed enemy infantry are not able to emerge from their trenches and attack the tanks and BFVs with close range AT weapons.

(3) The assault should be coordinated with suppressive indirect fire, especially VT, that would not pose a threat to the tanks and BFVs.

(4) A tentative dismount point should be selected if the enemy begins to place effective AT fires on the unit.

. **Assaulting dismounted.** When assaulting dismounted, the infantry platoon has three options:

(1) **With tanks.** The assaulting infantry breaches the obstacle line while tanks provide close support to suppress the enemy. The BFVs provide long overwatch and aid in the suppression effort. Once the breach is accomplished, the tanks are passed through and overrun the objective. The infantry follow quickly to clear the trench linde and ensure that the enemy is not able to attack the tanks at close range.

(2) **Separate from tanks.** Dismounted infantry moves to a position where it can provide close overwatch for the tank assault. The infantry may attack the enemy by fire only from a flank or the rear or may assault to divert attention from the tank assault and unhinge the enemy defense. The BFVs provide long overwatch to suppress the enemy and destroy point targets of opportunity.

(3) **Without tanks.** The dismounted infantry breaches the obstacle to permit the BFVs to assault. If the ATGM threat is too great, the infantry moves or infiltrates to a position to provide close overwatch fires for the BFV assault, or assaults and keeps the BFVs in overwatch.

c. **Actions of the dismount element.**

(1) If an assault position has been designated, the dismount element uses it to deploy. As little time as possible is spent in the assault position and the deployment into the assault formation should be made as rapidly as possible.

(2) When the rifle teams are generally on line, the platoon leader moves them forward using fire and movement. The final assault is not a stand-up, on-line rush. In the assault, squad leaders lead by example because it is hard for oral orders to be understood. "Follow me and do as I do" is the way to lead.

(3) Squad leaders must lead on through the enemy positions. They move using the best method for the situation. The soldiers follow that example. The advance may be by crawling or by short rushes from cover position to cover position. It must be aggressively done because the dismount element cannot stop once it is near the enemy. As it fights its way through the objective (still using fire and movement), the dismount element must avoid exposing itself to fire from enemy forces behind or to the flanks of the objective. Soldiers must not bunch up and make good targets.

(4) Normally, the entire dismount element moves forward to assault the enemy, supported by BFVs, tanks, and ITVs. When their fire is not adequate to support the assault, the platoon leader may set up his own base of fire.

(5) When the dismount element begins to fire and move through the objective, actions by squad leaders are the key to fire distribution. Squad leaders move near the center of their team where their own men can see them. Most of the time, they control fire by firing their own weapon into the area where they want their men to fire. They also can use arm-and-hand signals. At times, short, easily understood oral orders can be used, but in many cases oral orders will be drowned out by battle noises.

(6) Since the squad leader is near the center of his team, he fires his weapon to mark the center of the team objective. Men on his right and left fire to the sides of the point where his rounds are hitting. The squad leader also can use his M203 grenade launcher and mark the center of the team objective with a

smoke round. (The platoon leader can assign each team a different color.) The squad leader can use tracer ammunition or have the squad automatic weapons stay with him and mark the objective.

(7) As stated earlier, rifle team objectives during the assault are usually specific terrain features or specific enemy positions. The type of objective influences the kind of fire distribution the leader wants his weapons to have. He may want point fire or area fire. Since he may not be able to make his oral orders understood, and all of his men may not be able to see him, the team should have an SOP for point or area fire use.

(8) When the leader's marking fire hits a point that can be recognized as a bunker, firing port, or fighting position, then the team uses point fire.

(9) When the marking fire hits a point that cannot be identified as an enemy position, the team uses area fire.

(10) All leaders must strive to get a heavy volume of accurate fire on the objective, and they must make sure their men move forward aggressively. As the noise and confusion of battle makes voice control difficult, leaders may move to critical points to make sure that their commands are understood and carried out. They also must see that men do not fire randomly and waste ammunition.

(11) Assaulting troops, having closed on the objective, clear the enemy positions and move over the objective far enough to fire at any withdrawing enemy.

(12) When the BFVs join the dismount element on the objective, the dismount element should be prepared to support them by:

(a) Suppressing any remaining enemy positions as the BFVs move across the objective.

(b) Designating firing positions for them on the far side of the objective.

(c) Providing flank and rear security for them once they are in position.

(13) The rifle teams and the BFVs quickly occupy their assigned positions for consolidation to be ready for an enemy counterattack, or to remount the fighting vehicles and resume the attack after the objective is seized.

(14) To help coordinate and control the assault of two or more platoon dismount elements, the company commander designates a base platoon. The platoon leader in turn designates a base rifle team. Each dismount element guides on the com-

pany's base element. Teams guide on their element's base team.

Section IV. Deliberate Attack

The deliberate attack is one in which ample time is available for planning and coordination. It is often necessary when enemy resistance is medium to heavy and the enemy's defensive line must be breached. To ensure success and preclude heavy casualties, a careful integration of tanks, infantry, artillery, mortars, engineers, and other combat support and combat service support assets must be accomplished. A deliberate attack generally requires more assets than a hasty attack, as well as the time to effectively plan for them.

5-10. Situation.

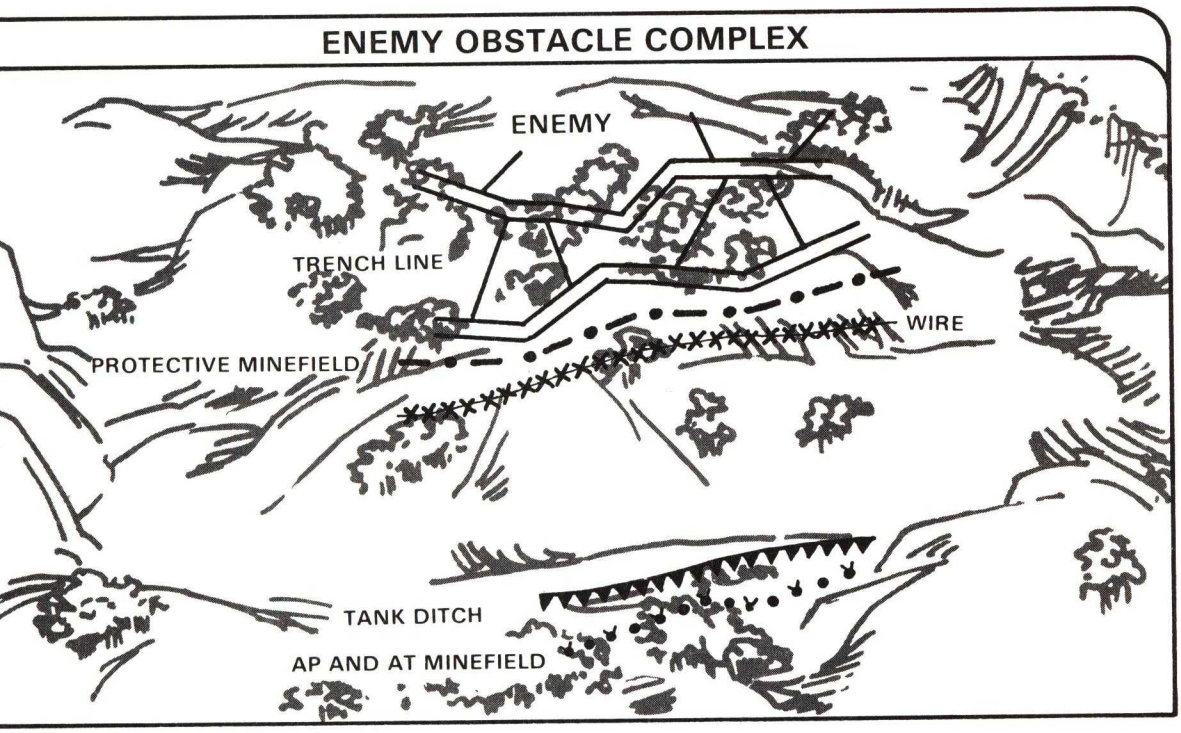
a. To the Bradley platoon, a deliberate attack often means that the enemy is alerted, ready, and dug in. It means he has coordinated his artillery and has probably emplaced mines and wire. His ATGMs have been carefully sighted and tanks and BFVs that attempt to attack his position head on will be quickly destroyed. The enemy position is often a strongpoint.

b. To conduct a deliberate attack is a decision by the commander to provide the planning and coordination time necessary to breach a strongly defended enemy position even at the cost of temporarily losing the momentum of the attack. A deliberate attack is conducted in situations where the cost of a hasty atack will be too great or because ample time has been provided to the unit with which to plan and coordinate.

5-11. Against heavy resistance.

a. Though a deliberate attack may be conducted against light enemy resistance, it usually results from the decision to attack a well-defended enemy. When a platoon or squad takes part in a deliberate attack, it does so as part of a larger force and may be employed as one of the following elements:

(1) **Breach** — usually an infantry element supported by engineers. Its mission is to move forward under the cover of direct and indirect fire, breach the obstacles and secure the far side. Though the obstacles vary, the threat normally constructs his obstacle line in a set way.

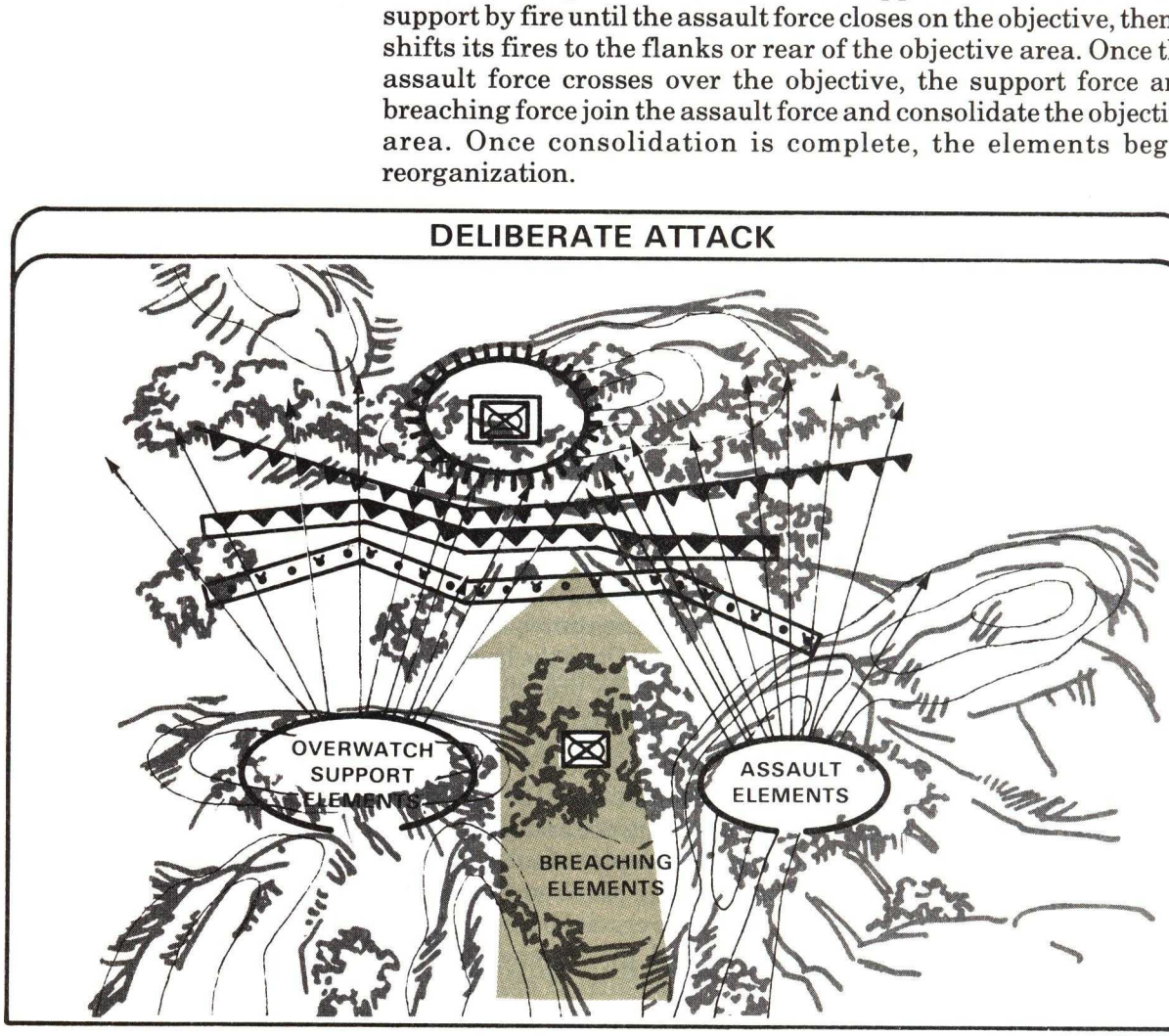


(2) **Assault** — usually made up of tanks and mounted infantry. Its mission during the breaching operation is to destroy and suppress the enemy on the objective. Once the breach is made, the assault force passes through the breaching force and assaults the enemy positions. Infantry will normally be required to dismount to clear enemy bunkers and trench lines.

(3) **Support** — usually a tank element and BFV element. Its mission is to support by firing during the breaching operation and the assault. This element attempts to isolate a portion of the enemy's defenses by suppressing him from long overwatch positions. This isolation process is crucial because if a portion of the obstacle line is reinforced by the enemy, it will be difficult for friendly units to concentrate enough men and firepower to make the breach. The company team and task force command will also be synchronizing assets such as indirect fire, smoke, attack helicopters, and CAS to further contribute to the isolation process.

The attack starts with heavy suppressive artillery fires on known enemy positions overwatching the breaching site. A smoke screen is established to conceal the breaching site. The breaching force moves forward covered by fires and concealed by smoke, and breaches the obstacle. When the breach is made, the breaching force marks the breach lane and secures the far side of the breach.

c. When the breach line is marked and secured, the assault for passes through the breaching force and assaults the objective. T infantry should dismount after the assault to clear any tren systems on the objective. The tanks will concentrate their fires tank-type targets or bunkers. The support force continues support by fire until the assault force closes on the objective, then shifts its fires to the flanks or rear of the objective area. Once t assault force crosses over the objective, the support force a breaching force join the assault force and consolidate the objecti area. Once consolidation is complete, the elements beg reorganization.



Section V. Consolidation and Reorganization

Consolidation and reorganization occur following both a hasty ar deliverate attack. Consolidation refers to the strengthening of a new captured position so that it can be defended against the enem Reorganization refers to changes in the squad or platoon organizatio that may be required because of casualties. This action allows the un

continue with the next mission, repel an enemy counterattack, or ntinue with the attack. The most critical period following a ccessful attack is the period of consolidation and reorganization cause it is the most favorable for an enemy counterattack.

objective is held until the company commander orders other action. times, especially with mounted assaults, the attack may be ntinued with little or no hesitation to exploit success. In this case, ly essential reorganization such as replacement of key personnel d critical ammunition resupply is accomplished, and consolidation unnecessary.

12. Consolidation.

Consolidation consists of those actions taken to secure an objective and prepare to repel an enemy counterattack. In this order, the company or company team commander designates platoon positions and actions to be taken.

The platoon consolidates an objective by:

(1) Occupying the position designated in the attack order (BFVs are moved into hull-down positions, if available, and assigned specific sectors of fire).

(2) Establishing local security and mutual support between squads and adjacent platoons.

(3) Eliminating any remaining pockets of enemy resistance and securing prisoners of war (PW).

(4) Designating positions for the dismounted rifle teams if the commander wants them deployed away from the fighting vehicles. (This will normally be on a dismounted avenue of approach to the objective. The rifle teams prepare hasty fighting positions.)

13. Reorganization.

Reorganization includes all actions taken to prepare to continue fighting. Reorganization should be by SOP and should include plans for remounting.

(1) **The squad leaders:**

(a) Replace key squad members who were lost (assistant squad leader, BFV gunner, driver).

(b) Replace gunners of Dragons and SAWs.

(c) Reload coaxial machine gun and 25-mm gun ammunition ready boxes.

(d) Redistribute ammunition among dismounted rifle team members and get ammunition, as required, from the fighting vehicle.

(e) Move casualties to a covered position, get medical aid to them, and arrange for their evacuation (as required).

(f) Report to the platoon leader the situation, casualties incurred, and status of ammunition and missiles.

(2) **The platoon leader:**

(a) Replaces key personnel, such as the platoon sergeant or squad leaders, who were casualties.

(b) Informs the company or company team commander of the platoon's status.

(c) Oversees evacuation of casualties.

(d) Requests needed resupply.

(e) Sends PWs under guard to the PW collection point.

b. Reorganization occurs any time the structure of the squad or platoon has been altered by the loss of a key individual. It is especially important when a member of the platoon or squad leadership has been lost. It may be as simple as reassigning the responsibility for carrying a weapon or assigning a new sector of fire on the battlefield. When the unit has suffered heavy casualties or one or more of the BFVs have been put out of action, major restructuring of the squad or platoon may be necessary to prepare for future operations.

Section VI. Limited Visibility Operations

BFV infantry platoons and squads frequently will be required to conduct offensive operations during limited visibility. These operations must not be considered unusual or special. Units must train and operate well under all conditions.

5-14. Purpose

Limited visibility attacks may be conducted to retain momentum of an operation started in good visibility. They may be to achieve surprise, exploit success, or rupture strong enemy defenses. The commander may wish to take advantage of the fighting vehicle's capability to operate during limited visibility as it will minimize the effectiveness of

emy antimortar fire. He may also want to gain a more favorable sition to continue the attack when visibility improves.

-15. Equipment capabilities and limitations.

BFV infantry platoons and squads are better equipped for attack operations during limited visibility than any comparable units in the world.

The driver's night vision viewer allows him to move the BFV, and to sense rounds fired from turret weapons during darkness. Night vision goggles let the Bradley commander observe from his opened hatch to control movement and provide close-in security. The integrated sight unit's thermal sight gives the gunner and Bradley commander the capability to see and engage targets under almost any visibility condition.

Even though the BFV has the capability to operate during limited visibility, it has limitations. The driver can see to drive, but the range and fixed field of his view scan limits his ability to provide close-in security. The gunner has excellent range with the integrated sight unit, but his field of view is narrow. Soldiers riding in the troop compartment have difficulty observing through the periscopes, and they can be blinded temporarily by bright flashes of light caused by weapons fire and explosions. This results in security being limited, especially to the rear and flanks.

Because the vehicle is relatively "blind" during darkness, the Bradley commander, wearing his night vision goggles, should observe from his opened hatch. Binoculars can also be used by platoon members to supplement night vision equipment.

WARNING

Remember that to operate the turret when the hatch is open, it must be on combat override. The gunner and Bradley commander must remember that the turret weapons could pose a danger to personnel observing from the cargo hatch, especially if the weapons are in the stabilized mode. The 7.62-mm coax could be accidentally fired into the troop hatch and the 25-mm gun could be damaged by striking it.

Weather, smoke, and dust can lower the effectiveness of the platoon's limited visibility equipment. The integrated sight unit's thermal capability can be limited by heavy rain, dense fog, or falling snow. The TOW also is affected. In some cases, the thermal sight's capability of penetrating fog or smoke exceeds the capability of the missile's guidance system to track and control the

missile. This means that the gunners may not be able to hit a target with the TOW, even though the target is in range and seen through the sight. The 25-mm gun and 7.62-mm coaxial machine gun are not affected.

f. The effectiveness of image intensification devices (driver's viewer, Bradley commander's goggles, starlight scopes) is reduced by rain, falling snow, fog, and smoke. Since the devices also intensify light from the moon and stars, the effectiveness of the devices is reduced on dark nights. These visibility limitations dictate slower rates of movement, require tighter formations, and limit further the platoon's flank security. The Bradley commander's ability to detect targets and control fires is reduced, and coordination between the fighting vehicle element and the dismount element becomes even more difficult.

g. Leaders should check the effectiveness of their night vision equipment before an operation to determine the effects of light, weather, and smoke on the equipment. Visibility conditions also can change abruptly during an operation. This requires constant reevaluation of equipment capabilities and limitations.

5-16. Movement considerations.

a. Movement is difficult during limited visibility. When selecting movement techniques and formation, leaders must consider the likelihood of enemy contact and the difficulty of control. Distances between men or vehicles usually need to be shortened to ease control. Finally, leaders must guard against a false sense of security by thinking darkness will conceal them. They also should assume the enemy has night vision devices, and they should use cover, concealment, and smoke as they would in daylight.

b. If possible, routes should be reconnoitered during good visibility. If ground reconnaissance is not possible, a detailed map reconnaissance is a must, keying on terrain features to be crossed and distances involved. Ridgelines, railroads, creeks, and other identifiable features should be used to guide on. Movement should parallel rather than follow such terrain features, because the enemy often will have them covered by observation and fire. Friendly mortar and artillery fire can also be used to assist navigation. By planning targets along the route on prominent, easily recognizable terrain features, the platoon leader can call for these fires as necessary. These targets are on standard features that the platoon leader will avoid. This will allow him to call for a specific target and verify where he is without endangering the platoon.

When moving dismounted, the element of surprise is the attacker's greatest advantage. Light and noise discipline must be enforced. When the platoon is moving mounted, the sound of the BFVs may alert the enemy. The enemy may have difficulty locating the platoon, because it is difficult to pinpoint a moving vehicle by sound only. Lights are a greater danger. Even blackout lights and filtered lights inside the vehicle are visible through the vision blocks and can be detected from great distances with passive night vision devices.

-17. Movement formations.

Mounted.

(1) The column and wedge formations are the easiest to control. The platoon leader should place his BFV as the base vehicle in either formation. Both formations make rapid movement easy by allowing the drivers to guide on the base vehicle with minimal supervision by the Bradley commanders.

(2) The line formation is the most difficult to control. When the driver is looking through his night vision viewer to the front, he cannot maintain visual contact with a flank BFV. Therefore, the line formation should only be used to move short distances.

Dismounted. Many of the considerations for mounted formations apply to dismounted formations. Dismounted rifle teams move closer together for better control. Soldiers should be close enough to see each other. Leaders should be near the front of the formation for movement control.

-18. Movement techniques.

. When visibility is limited by darkness only, the Bradley platoon should be able to move using any of the movement techniques, making only minor adjustments to formations as previously discussed. When smoke, fog, or falling snow limits visibility, the platoon's ability to provide overwatch may be reduced. In all conditions of limited visibility, the loss of security to the flanks and rear is a major consideration in movement planning.

. A platoon moving by traveling overwatch keys its movement on the lead BFV. The distance between the lead BFV and the platoon

is based on the ability of the driver and Bradley commander of the overwatch vehicles to keep the lead vehicle in sight. **The integrated sight unit should not be used as the primary means for maintaining visual contact. Such use would require the gunner and Bradley commander to watch the vehicle to their front rather than to watch for the enemy.**

c. When the traveling technique is used, the lack of flank security becomes an even more important consideration. The wedge formation allows a greater number of thermal sights to be employed on the battlefield and would be the formation of choice if the terrain permits.

5-19. Attacks.

a. Attacks during limited visibility require more detailed preparation than attacks during good visibility. In limited visibility, objectives are normally smaller and distances to them shorter. Plans must be kept simple but complete and understood by all. If time and the enemy situation permit, leaders should reconnoiter routes and observe the objective area during good visibility. Indirect fire should be planned for suppression and for illumination during darkness. Whether the attack is mounted or dismounted, every soldier should be rehearsed and questioned on his portion of the plan to ensure complete understanding throughout the platoon. Wire should be used as the primary means of communication until contact is made.

b. There are several ways the company or company team commander may attack during limited visibility. If the attack is to be done during darkness, he may illuminate the battlefield using indirect fire. If he wishes to take advantage of the limited visibility conditions or cannot adequately illuminate the battlefield, he may attack mounted, dismounting short of the objective as appropriate. He may also decide to attack dismounted and use stealth to gain surprise.

c. An illuminated night attack is conducted similarly to a daylight attack. Even with illumination, soldiers in the troop compartment cannot see well enough to fight effectively mounted. Illumination, however, makes control easier and allows rapid movement. It also improves the enemy's ability to detect advancing targets. Illumination fires are planned and called as needed — normally for the assault. Smoke can be used to cut down the effectiveness of enemy battlefield illumination and of some of his night vision devices. Indirect HE fire may be used to hide the sound of the BFVs

as well as to suppress enemy gunners. Thermal sights work with or without light equally well and should be used by the vehicle element as it fires into the objective.

The commander may decide to attack mounted to maintain attack momentum against an enemy occupying hastily prepared positions. This allows platoons to close rapidly on the objective, and it conserves the strength of the dismount teams.

In a dismounted attack, the platoon moves mounted to the last covered and concealed position short of the objective. The dismount element dismounts and assaults the objective while the fighting vehicle element provides covering fire. During the assault, the fighting vehicle element leader must closely control the element's fires to avoid endangering the dismounted soldiers. A prearranged signal, such as a pyrotechnic device, to lift and shift fires is even more crucial in limited visibility operations because of the inability of the gunner and Bradley commander to clearly distinguish the friendly attacking infantry from the enemy. As soon as the objective is seized, the vehicle element should quickly move to the objective area. The platoon should have a prearranged signal such as a blinking, filtered flashlight to help the fighting vehicle element locate and join with the dismount element. The dismount element leader should select positions on the objective for the fighting vehicle teams, and he should require each dismounted rifle team to provide a vehicle guide to simplify movement into positions.

Even though a nonilluminated attack is planned, the platoon leader should plan illumination from the LD to the objective so that, if needed, it is available. Once the rifle teams start their assault, illumination on the objective may help them detect targets to fire on, and rapidly eliminate enemy resistance.

The platoon leader also should plan for the use of smoke during the attack. If the enemy fires illumination, the platoon leader can call for smoke or use the BFV exhaust smoke generators to screen movement. Smoke also will reduce the effectiveness of some of the enemy's night vision devices.

The main advantage gained by attacking dismounted and using stealth is surprise. Attacks by stealth can be conducted during any condition of reduced visibility. The concept of a dismounted attack using stealth is to get as close as possible to the enemy's position without a fight — then, before he can react, to surprise and overwhelm him. This also allows the dismounted infantry to advance to a position of advantage where it can support a subsequent attack by tanks from a position of close overwatch during daylight.

i. The mission of the fighting vehicle element is to support the dismount element by fire. In the company or company team commander's OPORD, the fighting vehicle element is normally assigned a firing position, a sector of fire, and a route to the objective. The firing position may be along the LD or to the rear of the LD. The fighting vehicle element leader designates a firing position and a sector of fire for each fighting vehicle team. He also specifies how he plans to control their fire. He then points out the route for the dismount element and their portion of the objective.

j. The fighting vehicle element should move into the overwatch position during good visibility. If the noise of the vehicle will alert the enemy, it moves as close as it can to the overwatch position and halts. From there, a dismounted observer can be sent forward to observe the sector of fire and assist the fighting vehicles when they move into the position.

k. Once the objective is seized, the fighting vehicle element moves as quickly as it can to the objective and occupies hull-down positions just as in a daylight attack. The dismount element should provide guides to lead the vehicles across the objective to their positions.

l. When the company or company team commander plans a non-illuminated attack by stealth, he normally will use the following control measures.

(1) **Attack position.** While the attack position is used in a mounted attack, it takes on added importance in a dismounted attack. It should be short of the LD, provide cover and concealment, and permit easy entry and exit. The attack position is occupied only long enough for the unit to receive final instructions and ensure coordination.

(2) **Line of departure.** An LD is designated to coordinate the commitment of attacking units at a specified time of attack.

(3) **Point of departure (PD).** Because it is critical that all movements be closely coordinated, the dismounted rifle teams are assigned a specific point to cross the LD.

(4) **Release point (RP).** Each company commander releases control of his platoon to the platoon leaders at the platoon RP. RPs are far enough back to let units deploy before they reach the probable line of deployment.

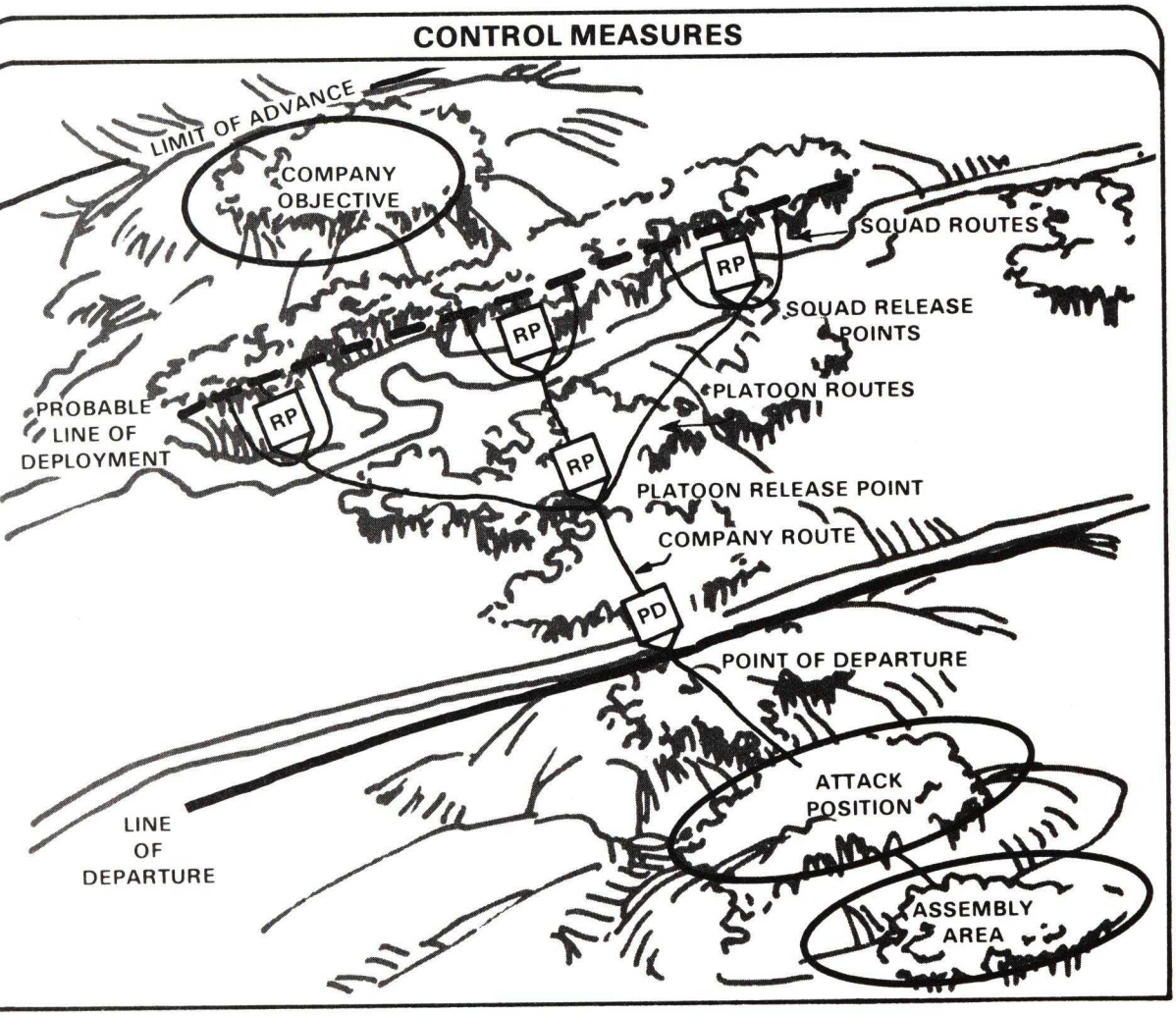
(5) **Route.** The company commander normally picks the route from the company RP to the platoon RP. Platoon leaders pick routes from the platoon RP to the squad RP.

(6) **Probable line of deployment (PLD).** The company commander may designate a PLD. This is the approximate

location where he plans to have the dismounted rifle teams complete deployment for the assault — if not yet detected. From the PLD, the rifle teams normally begin their assault using fire and movement.

(7) **Objectives.** The company commander assigns each platoon an objective, which is part of the company objective. These should be easy-to-identify terrain features.

(8) **Limit of advance.** To keep friendly supporting fires from falling on friendly dismounted troops, the company commander may designate a limit of advance. It should be a terrain feature that is easy to recognize even during limited visibility. The assaulting elements must not advance beyond this feature. This allows supporting fires beyond the objective without endangering friendly troops.



m. Wire communications are integrated into the plan and wire is run from the company release point to each release point up to the squad release point near the PLD. A field phone at each release point allows the leaders from company level down to the squad to maintain secure communications before the attack.

n. The company or company team commander may organize a patrol to guide the dismount elements from the attack position to the point of departure on the line of departure and on to the probable line of deployment. Also, this patrol may establish security at the PLD while the dismount elements are moving forward. Patrols are normally composed of two to four men from each dismount element, with the company or company team commander designating the patrol leader.

o. Except for small objectives, a platoon's dismount element attacks dismounted as a part of a company dismounted operation. Each dismount element will have a separate small objective or a portion of the company objective. The dismount elements move from the assembly using the information and movement techniques specified by the company or company team commander. Final coordination is made in the attack position and then the dismount elements move toward the LD. The commander may move the attack force to the LD along a single route under his control or, for short-distance attacks, he may designate separate routes for each dismount element. Once across the LD, movement is continuous with the rate of advance slow enough to permit silent movement. The traveling technique with rifle teams in column normally is used to ease control and maintain stealth. If the attack is discovered during movement, and if the element is close enough to the objective to begin the assault, the dismount element leader (usually the platoon leader) should immediately deploy his teams on line and begin fire and movement.

p. The dismount element should plan on using all of its night observation equipment to help control movement and to detect enemy positions. This equipment should include two starlight scopes, the Dragon night tracker, and any available night vision goggles if the Bradley commander does not need them.

q. If the attack is not discovered before reaching the PLD, the dismount element should deploy the rifle teams on line and inform the company commander when the teams are fully deployed. On the commander's order, the dismount elements move silently forward. They guide on the base element, using overwatch as much as possible.

The dismount element assaults the objective on order or when the attack is discovered. As in good visibility, the assault must be aggressive, using cover-to-cover rushes. The assaulting force must quickly gain fire superiority, by heavy volume fire, so that it can safely move. Tracers can be used to improve accuracy and to help control fires. Soldiers must not assault past the limit of advance.

As soon as the objective has been seized, the platoon leader should so inform his platoon sergeant. Guides should be posted to meet the vehicles and lead them into position. The rest of the dismount element eliminates remaining pockets of resistance and prepares for a possible enemy counterattack.

Section VII. Specialized Operations

adley platoons have the capability of operating in numerous types of ecialized situations. BFV's become a potent support weapon for fantry on urban terrain. The ability of Bradley platoons to conduct se combat with dismounted infantry and overwatch operations with ariety of weapon systems presents the leader with numerous options urban terrain.

addition, Bradley units will be required to utilize infiltration tactics offset the inherent capabilities of the defender who has had time to epare his position. The ability to infiltrate dismounted infantry to a sition in proximity to the enemy will be critical in aiding the netration of heavy resistance by armored forces.

-20. Attacking on urban terrain.

Offensive operations in urban areas are normally conducted by dismounted infantry. Tanks and BFVs follow, and are brought up to secure locations to provide direct-fire support. The tasks of the platoon in the attack of a built-up area include:

(1) **BFVs and tanks.**

(a) Isolating the objective building with direct fire to prevent enemy withdrawal, reinforcement, or counter-attack.

(b) Breaching walls.

(c) Suppressing enemy positions.

(d) Destroying enemy positions.

(e) Obscuring enemy observation, using the on-board smoke generator

NOTE:

Unpredictable wind currents between buildings can render smoke ineffective.

(2) **Dismounted infantry.**

(a) Assaulting and reducing enemy positions and clearing buildings under covering fires of tanks and BFVs.

(b) Neutralizing and destroying enemy antiarmor weapons.

(c) Locating targets for engagement by tanks and BFVs.

(d) Protecting tanks and BFVs against enemy individual antiarmor measures and surprise.

(e) Securing and defending an area once cleared.

b. To accomplish tasks effectively in built-up areas, BFV crews must be able to communicate with the infantry. Arm-and-hand signals will be the infantryman's primary means of communicating with the BFV. Prearranged signals or markers may indicate which buildings have been cleared. Infantry must acquire targets for the BFV or tank and maintain visual contact with the vehicle element commander in order to relay appropriate information, such as the kind of target and its location.

c. Urban terrain offers many concealed positions from which the enemy can engage tanks and BFVs at close range and from different directions. Vehicles are more susceptible to fire from above, below, and to the rear. Overwatching infantry fighting vehicles can protect tanks and BFVs from these engagements.

d. Standard vehicle gunnery techniques apply in urban areas; however, several factors must be considered:

(1) Although the elevation and depression of the tank main gun, 25-mm gun, and coax machine gun are greater than the standard threat tanks, these advantages may be offset in an urban environment where battlesight gunnery will be the norm, and well-placed and protected infantry antitank systems in buildings will be a major threat. Vehicle commanders must develop an "eye" for potential targets that can and cannot be hit with vehicle weapons.

(2) Particular care must be taken to protect dismounted infantry from the discarding parts of the armor-piercing discarding sabot round and the blast overpressure of all tank main gun ammunitions as well as APDS residue. The tank has greater armor protection than the BFVs. When contact with enemy armor or antitank weapons is expected, tanks should move in front and provide a measure of protection. The vertical elevation of the BFV's 25-mm gun provides excellent direct fire for engaging targets in buildings above the moving tanks.

Adhering to the fundamental principle of mutual support, and to reduce the dead space, the BFVs should move in pairs on alternate sides of the street with sectors of fire overlapping and oriented to the other side of the street. BFVs may move by bounds within each pair, or as a pair, depending upon the enemy situation and the width of the street. When streets are too narrow to permit two BFVs to pass, they should continue to operate on alternate sides; their primary turret orientation in this situation will be directly to the front, rather than the opposite side of the street.

Infantry should reconnoiter ahead of vehicles. This is particularly true when a vehicle has to turn at a street corner. Drivers should be trained to expose only the front of the vehicle and neutral steer quickly. This enables them to fire and move forward rapidly.

Vehicle crews must be constantly aware of available defilade positions. Corners, buildings, and rubble offer good defilade positions; however, these may offer less protection on urban terrain because of elevated positions available to enemy gunners.

Buildings provide both cover and concealment for vehicles. With careful reconnaissance, excellent hull and turret-down positions can be found. Buildings also present dangerous traps for armored vehicles. The following steps must be followed:

(1) Infantry clears the structure from rooftop to basement and provides continuous all-round security to prevent enemy infiltration for a close-in kill.

(2) Never enter a building with a basement if there is any doubt that the ground floor can hold the vehicle's weight.

(3) Enter through a rear wall to permit hasty withdrawal under pressure. Remember to protect the gun system. This may mean traversing the 25-mm gun over the rear deck before hitting the wall and creating the entry hole. The vehicle then backs out, traversing the turret, and entering the building to assume a firing position.

i. Tanks and BFVs can reduce exposure to enemy fire by moving rapidly across streets. The three to five seconds involved may often be too short for the enemy to acquire, shoot, and hit a moving vehicle.

5-21. Infiltration.

a. The ability of the BFV's dismounted infantry to infiltrate into a position of advantage before an attack by tanks and BFVs offers several important tactical options, especially in the deliberate attack.

b. When time is available, an infantry force can be infiltrated through the enemy obstacle line to a position of advantage near the enemy's flank or rear. From such a position, a dismounted platoon or company can support a subsequent attack by tanks or BFVs either by fire or assault. In both cases, the objective of the dismounted element is to use terrain (covered and concealed route) or limited visibility (haze, smoke, night) to position itself to attack and unhinge the enemy defense at a time and place that supports the attack by the tanks or BFVs. In addition, infiltration offers one of the means by which friendly units can overcome enemy forces defending built-up areas.

c. The considerations for an infiltration operation include:

(1) Time to position dismount infantry before the attack by tanks and BFVs.

(2) Ability to use terrain and limited visibility to conceal the infiltration.

(3) Coordination between the infiltration force and armored vehicle force before the departure of the dismounted infantry.

(4) Ability to navigate to a specific preselected position, probably under reduced visibility.

CHAPTER 6

Defense

he purpose of defensive operations is to repel an enemy attack and destroy the ttacker. Defensive operations may also be undertaken to hold critical terrain, gain time, or to wear down the enemy. The platoon defends as part of a ompany or company team and completes tasks assigned to it by the company company team commander.

Section I. Planning the Defense

he defense may involve fast, frequent movement between battle ositions and during counterattacks. Platoons and squads must be ble to respond to short-notice changes in mission and must be able to ght immediately from a new battle position. Thus, platoons must evelop and practice SOPs, master applicable drills, and learn to xploit the mobility and firepower of the fighting vehicle.

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6-1. Defensive tasks.

The platoons defend to hold terrain and destroy the enemy. Their defensive tasks include:

a. Destroying enemy BMPs, BTRs, and other lightly armored vehicles with the 25-mm gun and with Dragons, LAWs, and grenade launchers.

b. Destroying enemy tanks with the BFV-mounted TOW and with Dragons and LAWs.

c. Suppressing enemy antitank fires with the 25-mm gun, grenade launchers, 7.62-mm coaxial machine gun, SAWs, and rifles.

d. Repelling dismounted enemy attacks with the BFV and dismounted infantry.

e. Locating the enemy and providing security by manning observation posts and conducting patrols and ambushes.

f. Building obstacles to slow, stop, or canalize the enemy and providing security for obstacles.

g. Conducting platoon-size counterattacks, or as part of larger force, to regain a portion of their position that has been overrun.

6-2. Operation order.

a. When the platoon's mission is to defend, the company or company team commander must explain his plan for the defense. He does this by issuing an operation order. From the order, the platoon leader learns:

(1) The most likely and most dangerous enemy avenue of approach and expected enemy course of action.

(2) The platoon's mission.

(3) The company team and battalion task force commander's concept, or commander's intent, of how the defense will be fought.

(4) The position of the platoon in the company or company team defense.

(5) The platoon's sector of fire or engagement area.

(6) The fire support that is available.

(7) The on-order missions for the platoon.

(8) The evacuation or destruction procedures for damaged vehicles.

(9) The evacuation procedures for friendly casualties.

(10) The place where prisoners of war are to be taken.

(11) The availability of ammunition, mines, barrier materials, and other supplies.

(12) The special signals that are to be used.

On receipt of a company operation order, the platoon leader begins his troop leading procedures (discussed in Chapter 3). He begins with an analysis of the mission, enemy, terrain, troops, and time available.

Often, the platoon leader will have to issue simple, fragmentary orders and rely heavily on SOPs because the tactical situation requires immediate action. During occupation of a battle position, the platoon and squads should use the applicable drills to reduce time and possible confusion. Regardless of the time available, the platoon leader should do as many of the troop leading procedures as possible.

When the platoon leader has completed his analysis, made his reconnaissance, and developed his plan, he then completes his order. The order should follow the standard five-paragraph operation order format and be issued orally. Where possible, SOPs should be referred to in the order. This helps to shorten the order. When possible, the platoon leader should give his order from a point overlooking (or on) the platoon's defensive position. The order must explain what is to be done, how, when, and by whom. The squad leaders then give orders to their squads.

6-3. Priority of tasks.

To help the platoon use available time efficiently, the leader should establish task priorities. Normally, these are in the SOP, but they can be modified as necessary by the platoon leader or company commander. In most situations, the tasks are:

(1) Establish security.

(a) Establish OPs.

(b) Conduct local patrols to search for enemy stay-behind forces, sensors, mines, or booby traps.

(c) Position M8 alarm.

(d) Maintain one-third of troops on security at all times.

(2) Position key weapons (location, sectors of fire, PDF, FPF).

(a) BFVs.

(b) Dragons.

(c) M60 or SAWs.

(3) Clear fields of fire and prepare range cards and sector sketches.

(4) Prepare primary fighting positions.

(5) Emplace hasty minefield/obstacle system.

(6) Establish local communications system (wire, trenches).

(a) BFVs.

(b) Fighting positions.

(c) OPs.

(7) Emplace PEWS, night vision equipment, and other warning devices (higher priority during limited visibility).

(8) Improve fighting positions.

(a) Overhead cover.

(b) Aiming stakes.

(c) Camouflage.

(d) Bury land lines.

(e) Hide or dispose of fresh earth.

(9) Prepare alternate and supplementary positions.

(10) Stockpile ammunition, water and food, and conduct maintenance.

b. Some of these tasks should be done at the same time. The platoon leader and squad leaders must closely supervise the activities to ensure that valuable time is not lost on tasks of minor priority. The first 30 minutes of the occupation of a defensive position are critical because during this period security is established, positions are designated, and work is begun. The platoon leader must conduct a hasty reconnaissance to ensure that the location of his position is correct and that the squad sectors and key weapons positions will not have to be relocated once they are in place.

The platoon leader should coordinate with both flank units and with his company team commander early enough to preclude having to move his squads or make major adjustment in fighting positions after construction is well under way. Squad leaders coordinate on their flanks as well.

Constant supervision of the preparation of defensive positions is necessary, especially the verification of squad sectors and key weapons positions and fields of fire. If it becomes obvious to a platoon or squad that a sector must be adjusted or that positions must be shifted, the decision should be made quickly and the soldiers moved where they are needed most.

Rest, sleep, and eating plans should be made so that security and work can continue, but not all personnel are exhausted when the enemy attacks.

-4. Indirect fire planning.

Most indirect fire planning is done by the company commander and the fire support team chief with input from the platoons. A copy of the target list is given to the platoon leader. The platoon leader and his FO check the target list to ensure that fire is planned on all enemy avenues of approach and on known or likely enemy positions in the platoon sector of fire. If more targets are needed, the FO requests them through the FSO. The FO normally stays with the dismounted element since he has virtually no capability to call and adjust indirect fires when mounted.

At platoon level, fires should be planned to the front, on top, and to the rear of platoon positions. In each of these areas (front, top, rear), fires are planned on likely enemy avenues of approach and on prominent terrain features from which fires may be adjusted. In addition, fires are planned on dead space that cannot be adequately covered by other platoon weapons.

Fire planning is a team effort between the platoon leader and his FO. It usually occurs after the rifle team sector sketches and BFV range cards have been compiled and the platoon leader has determined where his defensive plan requires strengthening. At platoon level, he selects a few critical targets that he and his other key leaders can easily identify during the battle.

When the platoon leader, with the aid of his FO, determines which targets are to be covered by indirect fire, the coordinates (eight-digit, if possible) are determined and the information is

passed to the company team FSO who compiles all of the platoon fire plans for the company commander. Eventually, the confirmed target list is returned to the platoon where the FO quickly confirms the targets by plotting them on the map since the company commander may have added or deleted some targets. Once the confirmed targets have been plotted on the map, they are matched to the terrain and then disseminated among key personnel (PSG, RATELO).

e. The guide for how many targets a platoon leader should request is based on his ability to call for them during the battle. Generally, he should attempt to memorize the target numbers for all of the indirect targets in his platoon sector. This will allow him to quickly call for those fires during the battle without having to refer to a map or reference card and without having to rely on light if the fight takes place during limited visibility. Normally, a few targets are sufficient in a platoon sector, especially if they are on prominent terrain features from which they can be adjusted.

f. The company commander may assign a mortar or artillery final protective fire (FPF) to a platoon. An FPF is a prearranged barrier of fire. A platoon leader must plan the FPF location with his FO and the FSO. It should cover the most threatening dismounted approach. The FPF is planned close to the platoon position, but not close enough to endanger friendly troops. The FO will advise the platoon leader on how close to the rifle teams an FPF can be fired with no danger to the troops. This varies with the type of weapon and ammunition fired. When assigned an FPF, the platoon leader will have authority to call for it unless the company commander retains authority. **The FPF is essentially fired as a last resort to stop an enemy assault.** On order, it is fired continuously until it is ordered stopped. All other platoon weapons fire while the FPF is being fired.

WIDTHS OF IMPACT AREAS OF TYPICAL FPFs

WEAPON	UNIT	WIDTH OF FPF IMPACT
107-mm mortar	Platoon (6 mortars)	200 meters
155-mm howitzer	Battery (6 howitzers)	300 meters
155-mm howitzer	Battery (8 howitzers)	400 meters

6-5. Obstacle planning.

a. The platoon has little organic capability to emplace significant obstacles but can enhance its sector and individual positions in a number of ways.

(1) Mines can be carried on the BFVs and a hasty protective minefield can be emplaced.

(2) Tactical wire can be carried on the BFVs and used either for protection or as a deception to confuse the enemy as to exact position locations.

(3) Trip flares, Claymores, and field expedient tangle foot obstacles can be emplaced.

(4) Trees can be cut using pioneer tools, and field expedient abatis and roadblocks can be constructed.

b. If a platoon leader receives or is told he will receive engineer support in his area, he should still put in those obstacles that he is capable of emplacing with his own assets and then prioritize those projects that require outside assistance. In many cases, engineer assets will be executing specific engineer missions in the platoon area that have been directed by higher headquarters. In these cases, the platoon leader should verify that the obstacles fit into his platoon defensive plan and if not should coordinate with the engineer element or the company team commander.

c. Once engineer obstacles have been emplaced, the platoon leader should review his platoon obstacle plan to determine if any adjustments of his own hasty protective obstacles are required.

d. Obstacles, once emplaced, must be covered by observation and fire. If not observed and covered by fire, they will be easily breached or bypassed, especially during limited visibility.

6-6. Defensive sector sketch.

a. The leaders of the fighting vehicle crews prepare BFV range cards (DA Form 5517-R) and squad leaders prepare sector sketches. (Each antiarmor specialist and automatic rifleman prepares a range card.) The sketches and range cards serve as memory aids to the platoon and help the platoon leader prepare his platoon fire plan.

b. A rifle team sector sketch is a rough drawing, as close to scale as possible, showing:

(1) Main terrain features in the sector and the range to each.

(2) Each primary position.

(3) Engagement areas or primary and secondary sectors of fire for each position.

(4) SAW or M60 FPLs or PDFs.

(5) Type of weapon in each position.

(6) OP and leader positions.

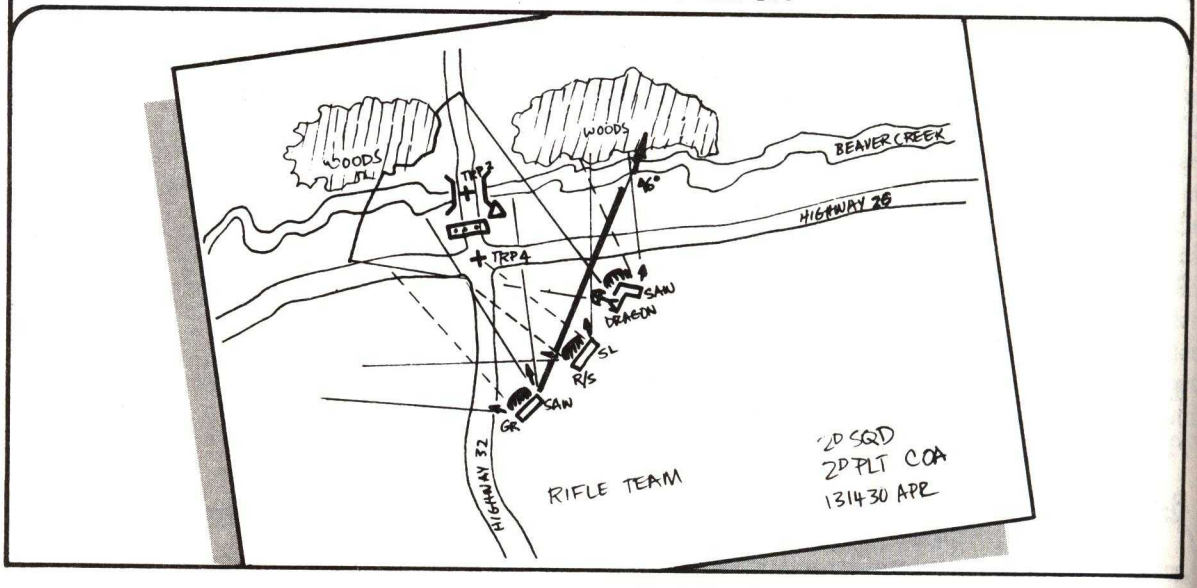
(7) TRPs in the sector.

(8) Dead space.

(9) Obstacles.

c. The sketch should be prepared based on direct observation of the sector and by using each weapon's range card. (See Appendix C for explanation of range card preparation.) Two copies of the sketch should be made. One copy goes to the platoon leader. The other copy remains at the position.

SQUAD SECTOR SKETCH



NOTE:

The parts of the squad sector sketch described are the minimum items for a meaningful sketch. The platoon SOP may require more detail. The M60 machine gun will be retained in mechanized squads until issuance of (M249) SAW. FPLs or PDFs apply to M60s or SAWs only when employed with tripod and traversing and elevating mechanism.

Squad leader/assistant squad leader prepares the team sector sketches and submits them to the platoon leader. Bradley commanders prepare range cards for their individual vehicles and submit them to the mounted element leader. The platoon leader combines sketches and range cards to make a platoon sector sketch.

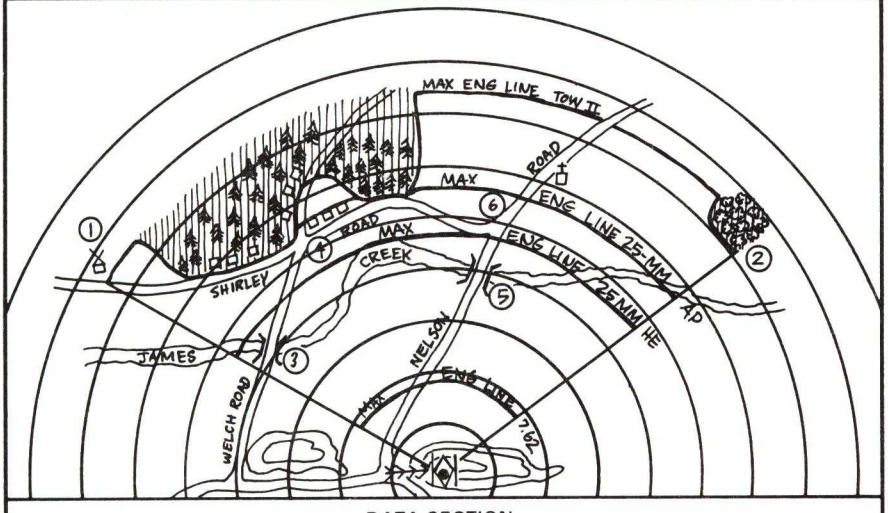
BFV RANGE CARD

STANDARD RANGE CARD

For use of this form see FM 7-7J. The proponent agency is TRADOC.

SQD 1ST
PLT 3RD
CO B

MAGNETIC NORTH



DATA SECTION

POSITION IDENTIFICATION: PRIMARY
DATE: 1 JULY 85/0835
WEAPON: BRADLEY B-31
EACH CIRCLE EQUALS METERS: 500

NO	DIRECTION DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
1	5970 MILS/5420 MILS				LEFT LIMIT / WINDMILL
2	1610 MILS/0920 MILS				RIGHT LIMIT / ORCHARD
3	5440 MILS	-10		AP	TRP 1 / BRIDGE WELCH ROAD
4	5830 MILS	+5		HE	TRP 2 / RJ 501
5	0220 MILS	-3		AP	TRP 3 / BRIDGE NELSON ROAD
6	0240 MILS	+2		HE	TRP 4 / RJ 478

REMARKS:
WPNS REF POINT - FROM RJ 460, MAZ 298° - 500M

DA FORM 5517-R, FEB 86

e. A platoon defensive sector sketch is a sketch drawn as closely to scale as possible and includes a target list for direct and indirect fires. The sketch should show:

(1) Platoon or element sector or engagement area.

(2) BFV and team positions.

(3) BFV positions with primary sectors of fire or engagement areas.

(4) BFV remount point.

(5) Dragon and SAW positions with primary sectors of fire for each.

(6) SAW or M60 FPLs or PDFs.

(7) Maximum engagement ranges of TOWs, 25-mm gun, and coaxial machine guns.

(8) OPs.

(9) TRPs and target numbers.

(10) Mines and other obstacles.

(11) Indirect fire target locations.

(12) The indirect fire FPF location, if allocated.

f. Because the platoon leader will be involved in numerous activities in the early part of the defense, he can use his FO to consolidate team sector sketches and BFV range cards into a tentative platoon sector sketch. This not only saves the platoon leader valuable time but allows the FO to immediately begin his fire planning and determine which targets to recommend to the platoon leader.

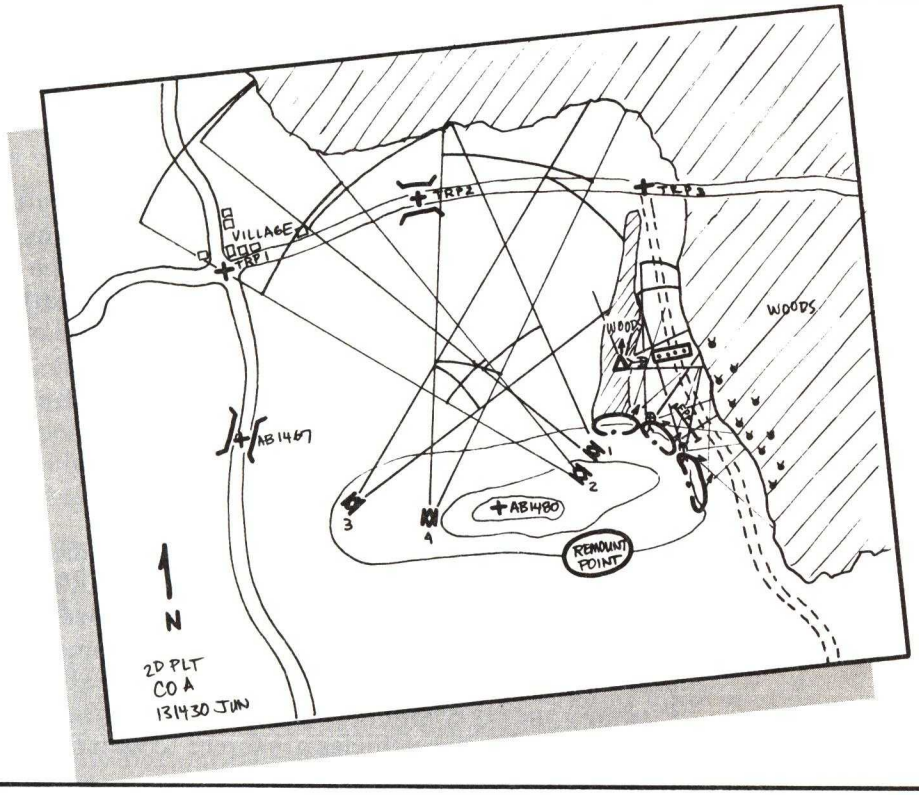
g. At least two copies of the platoon sector sketch should be prepared, one for the platoon leader and one for the company commander. If time permits, additional copies may be given to each subordinate team or squad.

h. The platoon sector sketch must be forwarded to the company commander as soon as possible to facilitate company fire planning.

NOTE:

The parts of the platoon defensive sector sketch shown on page 6-11 are the minimum necessary. The company SOP may require more detail.

PLATOON SECTOR SKETCH



7. Coordination between adjacent platoons/squads/teams.

Platoon leaders coordinate with adjacent platoons. Squad leaders coordinate with adjacent teams so that all positions and all units are mutually supporting. The platoon leader checks to ensure that this coordination has taken place. Coordination normally is initiated from left to right. Gaps between positions are covered by fire as a minimum and coordinating points are established to ensure that units meet at some specific point on the ground to tie in their flanks.

Information exchanged includes:

(1) Locations of primary, alternate, and supplementary positions; and sectors of fire for BFVs, SAWs, and Dragons.

(2) Location of dead space between units and how it is to be covered.

(3) Location of OPs.

(4) Location and types of obstacles and how to cover them.

(5) Patrols to include size, type, time of departure and return, an routes.

c. In many cases, a sector sketch can be exchanged that accomplishe most of this.

d. In some cases, BFVs may be positioned not only to support th dismount element but also to support flank platoons. At times, thi might even be a compromise position that must be occupied to ti in a vulnerable flank. Since platoons defend as part of a compan team, platoon leaders must be especially careful of tying in thei flanks.

6-8. Planning for remount.

a. Because Bradley platoons will dismount their infantry in the defense, the remount must be planned in detail. This is especiall true where subsequent movement is an integral part of the defensive plan and especially when the dismount and vehicle elements are separated for the fight. The inability to plan and execute a speedy remount causes the advantage of the BFV's speed to be negated as the vehicles are forced to wait for the dismounted infantry to linkup and remount.

b. Planning for the remount at platoon level should include:

(1) Remount location.

(2) Reconnaissance of route to the remount point by both the vehicle and dismount elements.

(3) Marking of the route to the remount point.

(4) Signals to initiate the remount and contingencies for:

(a) Limited visibility.

(b) Loss of communications.

(c) Loss of leaders.

Section II. Defensive Tactics and Techniques

The platoon's defense must capitalize on the BFV's firepower, armor protection, agility, thermal vision equipment, **and** the dismounted infantryman's fighting capability.

BFVs are best positioned to defend against enemy mounted attacks along mounted avenues of approach.

Rifle teams are best positioned to defend against enemy dismounted attacks along avenues that restrict mounted movement or on the reverse slopes of mounted avenues of approach where they can deliver surprise fires at the effective ranges of their LAWs and Dragons against enemy vehicles and not be subjected to long-range suppression by the enemy.

-9. Basic tactics.

The BFV offers defensive employment options not previously available to the combined arms team. The capable and sophisticated turret weapons of the BFV allow it to fight against the enemy in its own right, while the dismounted infantry can be used in restrictive terrain to their best advantage.

Bradley units are capable of fixing or substantially limiting the movement of the attacking enemy, thus allowing tanks to be consolidated and deliver a powerful counterattack.

The fixing of the enemy — denying him the ability to withdraw part of his force for employment elsewhere — by Bradley units is done by the BFVs using their enhanced firepower and maneuverability while the dismounted infantry digs in on restrictive terrain or on a reverse slope and fully exploits the advantage of the defender to prepare the battlefield. As with the offense, when dismount occurs, a fundamental change in the command and control structure takes place. Although the platoon leader remains in overall control of both the vehicles and dismounted infantry, he retains direct control of the maneuver element and turns over functional control of the other element to the platoon sergeant. One leader concentrates on fighting the dismount element to take advantage of restrictive terrain and orients his fight to dismounted tactics while the other takes control of the vehicles and concentrates on the BFV fight. Though at times these two elements (dismounted element and mounted element) may separate from each other, they must fight in relation to one another.

The BFV's anti-BMP, antitank, and antipersonnel firing systems combined with its survivability must be optimized through the use of:

(1) Movement.

(2) Cover and concealment.

(3) Dispersion.

(4) Mutual support.

(5) Flank shots.

(6) Stand-off range.

(7) Employment in depth.

6-10. Methods of employment.

a. There are three basic methods of employment for the Bradley platoon: same battle position, same avenue of approach; same battle position, different avenues of approach; different battle positions, same avenue of approach.

(1) BFVs and dismounted infantry on the **same** battle position covering the **same** avenue of approach.

(a) Using this method, the platoon can defend against mounted and dismounted attacks and move rapidly to another position.

(b) Within the battle position, the BFV may be positioned with the rifle teams forward or around the vehicles for security. Normally, if the dismounted avenue of approach is the most dangerous to the platoon and the terrain is restrictive, the BFVs will be positioned based on their ability to employ the 7.62-mm coax in support of the dismounted positions. Otherwise, the BFVs are positioned to take advantage of their long-range fires and the infantry either provides them security or takes up positions on a reverse slope.

(c) The BFVs remain on the same battle position as the rifle teams when the terrain provides good observation, fields of fire, and cover and concealment to both dismounted infantry and BFVs. In addition, the battle position must provide fields of fire that take advantage of the restrictive terrain that dismounted infantry prefers and/or provide protection for the dismounted infantry from the long range fires of the enemy.

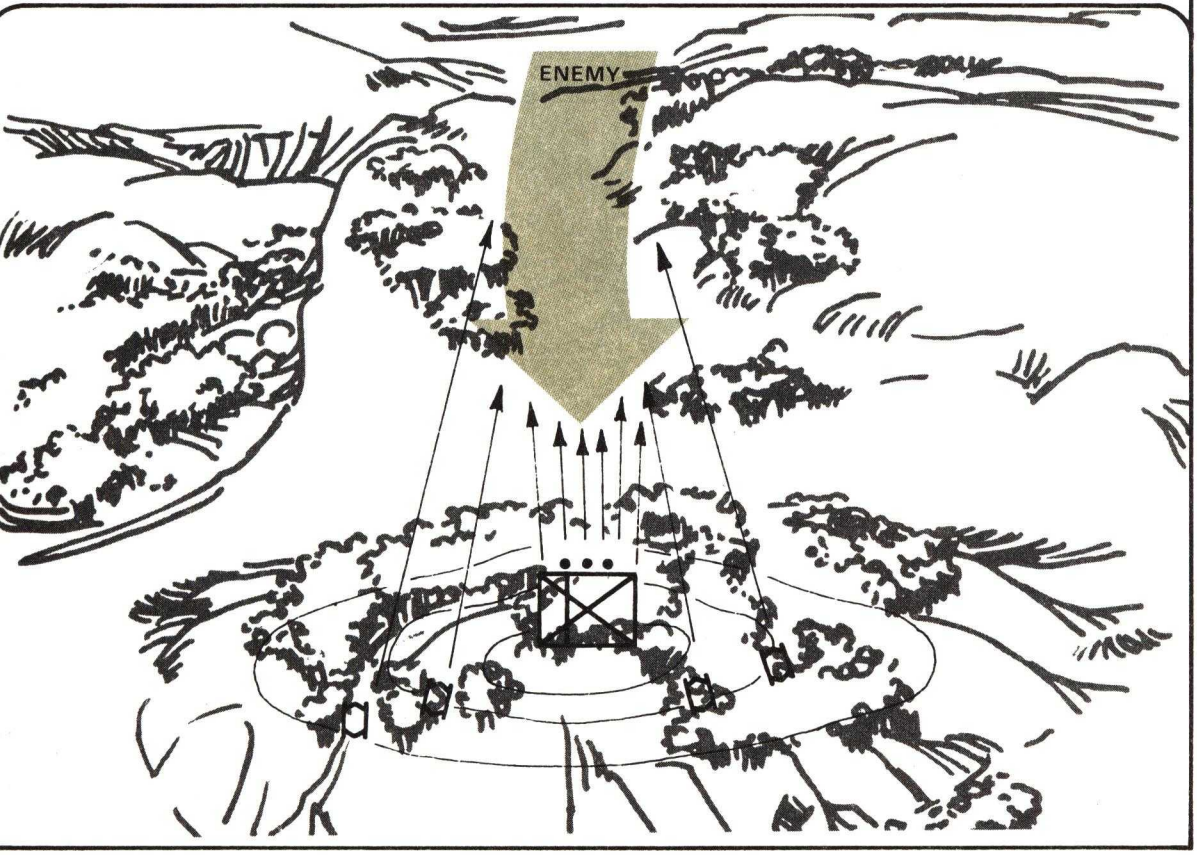
(d) The platoon leader assigns each vehicle and rifle team a primary position and sector of fire. He should also assign alternate positions particularly with the BFVs. The platoon leader designates who will man OPs and gives a general location for each OP. OPs are eventually adjusted to better fit into the company team reconnaissance and surveillance (R&S) plan.

(e) The platoon leader supervises the positioning of each vehicle, ensuring that it ties in with other vehicles according to his concept of the defense. Often this means that the vehicles are offset to the flanks to get better long-range shots.

(f) Employing both elements of the Bradley platoon on the same battle position covering the same avenue of approach is often a conservative use of the Bradley platoon. Its primary advantages are:

- Facilitates command and control functions within the platoon because of the proximity of both the vehicle and dismount elements as well as their orientation on the same approaching enemy.
- Facilitates remounting of vehicles.
- Provides increased security for the BFVs because of the proximity of friendly dismounted troops.

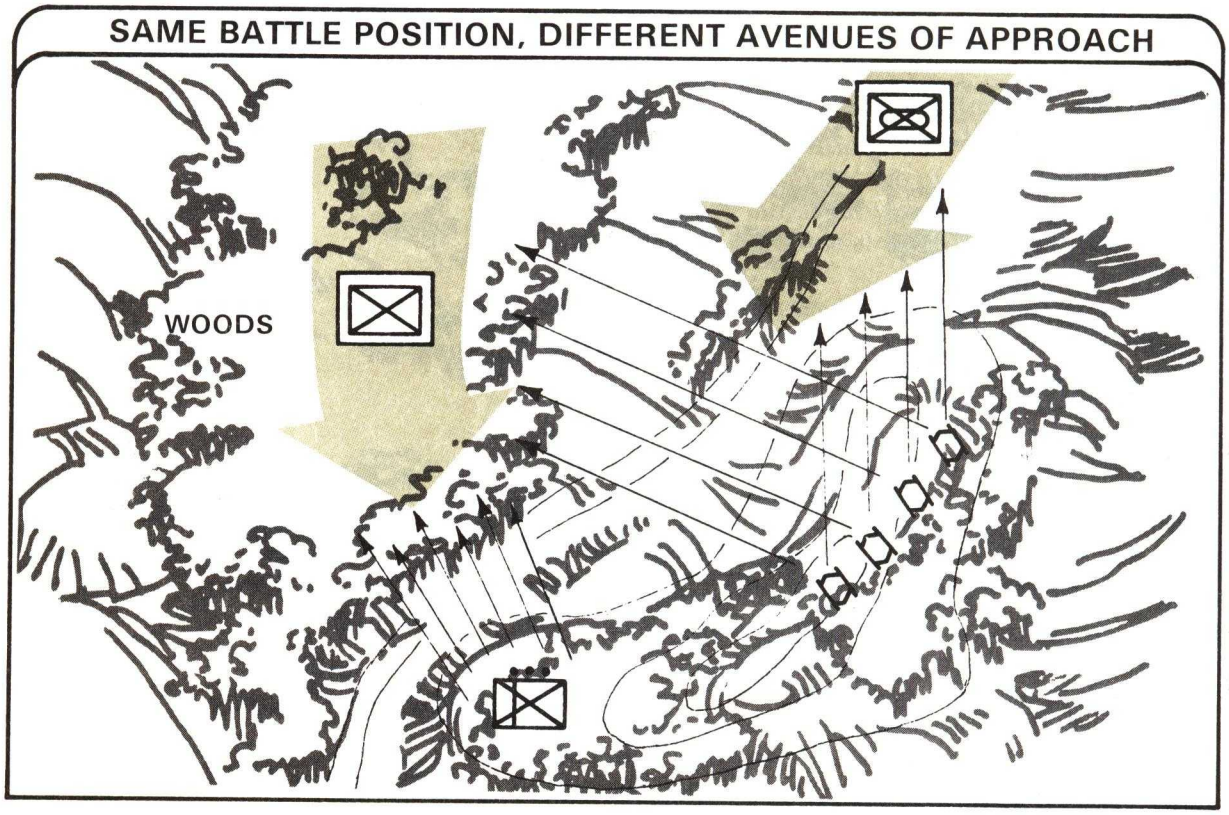
SAME BATTLE POSITION, SAME AVENUE OF APPROACH



(2) BFVs and dismounted infantry on the **same** battle position covering **different** avenues of approach.

(a) When the battle position has two equally dangerous avenues of approach, one with long-range and one with short-range fields of fire, the fighting vehicle element is positioned to take advantage of its long-range fires, and the dismount element is placed for short-range fires. This allows good positioning of the fighting vehicle element and the dismount element because each is positioned on terrain best suited to its capabilities. During reduced visibility, the platoon leader will frequently direct repositioning of some of the dismounted element to provide adequate local security for the BFVs.

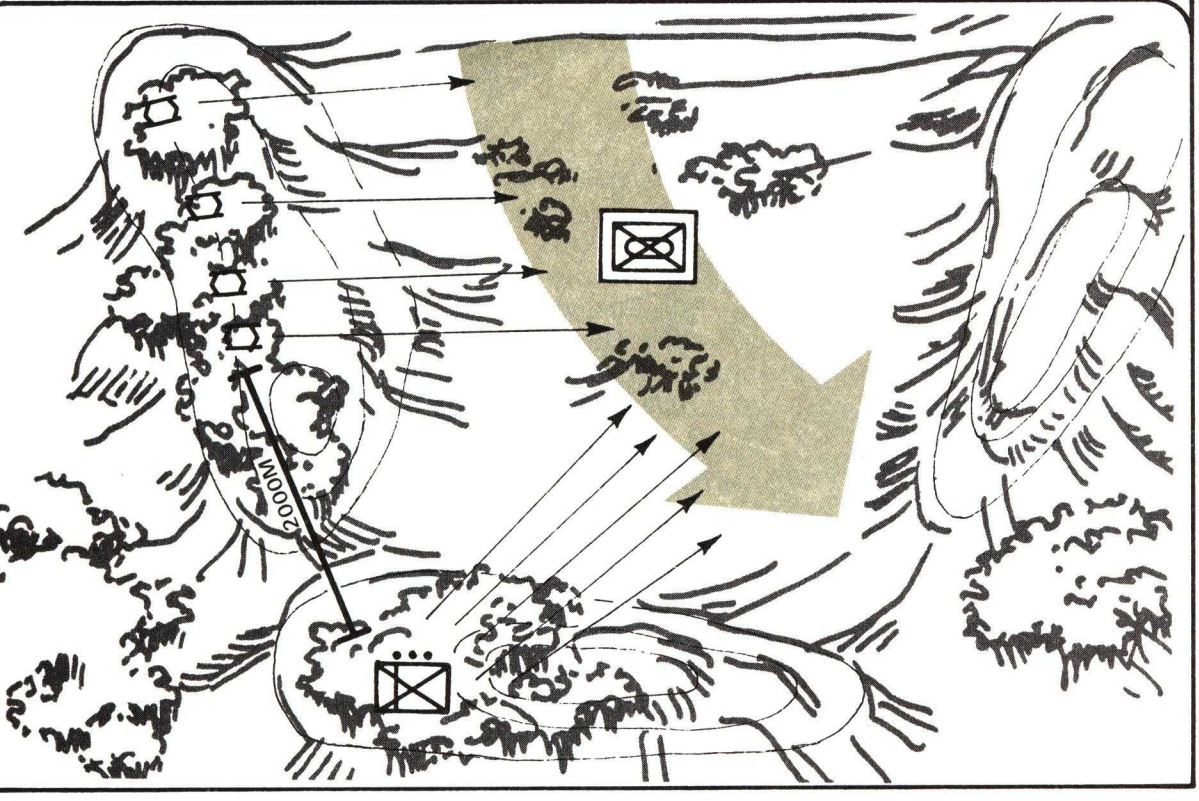
(b) Plans must be made to shift the BFVs if a dismounted avenue of approach becomes the most dangerous and the mounted is ignored by the enemy. In such a case, all or some of the BFVs could use their speed to quickly reposition in the vicinity of the dismounted element and add the fires of the 7.62-mm coax, which would have the effect of adding machine gun support to the dismounted fight.



(3) BFVs and dismounted infantry on **different** battle positions covering the **same** avenue of approach.

(a) If positioned on separate battle positions, BFVs and dismounted infantry must fight in relation to each other and cover the same avenues of approach. Fighting in relation to one another means that the BFVs are able to provide the dismounted infantry with supporting fires from their primary, alternate, or supplementary positions. Both elements are positioned to engage enemy forces on the same avenue of approach, but at different ranges. This will normally equate to a maximum of three-fourths of the effective range (approximately 2,000 meters) of the BFV's primary armament — the 25-mm gun. This ensures that the BFV fires can reach and overlap the dismount positions. As long as they are fighting in relation to each other, the platoon leader will normally continue to control both elements.

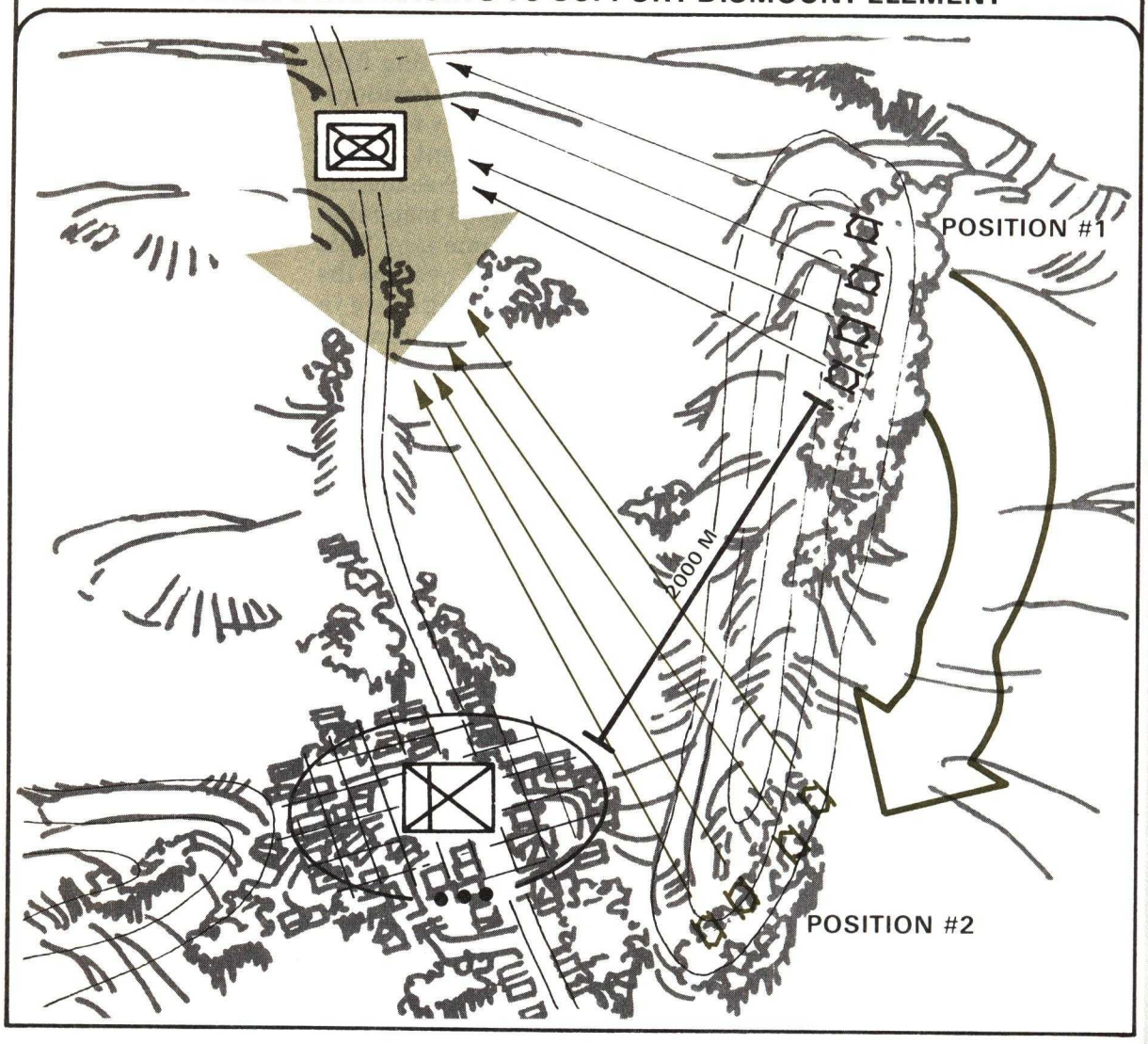
DIFFERENT BATTLE POSITIONS, SAME AVENUE OF APPROACH



(b) When it is necessary to gain better observation and fields of fire and take better advantage of the BFV's

weapons, the fighting vehicle element can be employed forward of the dismount element on the same avenue of approach.

BRADLEYS DISPLACING TO SUPPORT DISMOUNT ELEMENT



- The dismount element should use available time to prepare fighting positions and obstacles. When the enemy attacks, the BFVs normally will engage enemy formations and, at a prearranged signal or event, move to alternate positions to the flank or to the rear of the dismount element. The timing of this move is critical. While maximum advantage can often be gained by employing the fighting vehicle

element forward, the vehicles become more and more vulnerable to enemy fire as the enemy closes.

- Since the fighting vehicle element will be the first to see and engage the enemy, and timing of movement to alternate or subsequent positions is critical, the platoon leader normally commands the fighting vehicle element and the platoon sergeant is the dismount element leader. Sometimes, tactical considerations dictate other methods. For example, when the primary fight is expected to be dismounted, the platoon leader would stay forward with the dismounted element. As the situation develops, the platoon leader may move to the fighting vehicle element or to a position where he can better control both elements. This allows the platoon leader to stay abreast of the situation and still provide maximum control where the primary fight is expected. Control is most difficult when the elements are separated. The commander may tell the platoon leader which element to locate with.

- The leader of the dismounted element must be able to plan operations that are conducted without the support of his vehicles. The quantity and type of weapons, ammunition, mines, equipment, and supplies to be with the dismount element must be considered. How long the teams will operate separately and how quickly the rifle teams must be able to remount are also important planning considerations.

- The BFVs may be employed well forward to perform a specific mission. When the mission is completed, the BFVs displace to a position to support the dismount element. This method may be used when the commander wants to use the BFVs for long-range antiarmor engagements well forward of the dismount element's positions. In such fights, the BFVs must avoid decisive engagements so they can displace to their next positions. Rifle teams are positioned in the rear to improve positions and emplace obstacles. Once the BFVs have displaced to the rear, they can fight using any of the methods discussed earlier.

b. When a Bradley platoon's mounted and dismounted elements are not going to be fighting in relation to each other, the control of both elements should be consolidated at company team level using the company team 2IC.

(1) A company or company team commander may consolidate the company's dismount elements in one location and deploy the platoon's BFVs separately in the following situations:

(a) A large number of dismounted troops are required to hold a position, for example, a strongpoint.

(b) Primary position for the dismount element does not allow adequate fields of fire for the BFV's weapons.

(c) The dismount element must occupy heavily wooded or rugged terrain that the BFV cannot traverse.

(d) When both a mounted and dismounted avenue of approach must be defended and the terrain is such that both cannot be defended from the same battle position.

(2) In this case, the dismounted infantry and BFVs may not be able to support each other initially but plans should be made to incorporate the BFV's speed to reposition them to support the dismounted infantry from supplementary or subsequent positions.

(3) During limited visibility, the company or company team commander may modify his plans to provide additional security for the fighting vehicle element. This can be done by moving a rifle team to the fighting vehicle element's position or by rejoining the platoon on a single battle position.

6-11. Reverse slope defense.

a. The estimate of the situation will often require the company team commander to employ his elements, especially his dismounted infantry, on the reverse slope. If the factors of METT-T require the employment of dismounted infantry on what is essentially a mounted avenue of approach, the dismounted infantry must be concealed from the enemy at ranges beyond which their own weapons are effective. This means that dismounted infantry should be protected from enemy tank gun and observed artillery fire. This applies even when friendly forces are fighting with their

tanks and long-range ATGMs. Ideally, dismounted infantry should be deployed so that they are not vulnerable to fire from enemy direct fire systems they cannot effectively engage with their own weapons.

b. The majority of dismounted infantry weapons are not effective beyond 600 meters. In order to reduce or preclude destruction from enemy direct and indirect fires beyond that range, a reverse slope defense should be considered.

c. This conflicts, to some extent, with the need for the maximum observation forward to adjust indirect fire on the enemy as well as the need for long-range fields of fire for friendly tanks, BFVs, and ATGMs. In some cases, it may be necessary for tanks, BFVs, and ATGMs to be deployed forward while the dismounted infantry remain on the reverse slope. These vehicles withdraw from their forward positions as the battle closes and enemy artillery becomes effective. The vehicles' new positions should be selected to take advantage of the BFVs' long-range fires to get enfilade shots from the depth and the flanks of the reverse slope.

d. At night, the nature of the threat may change and dismounted infantry may occupy the forward slope or crest to deny it to the enemy. In those circumstances, it is feasible for a dismounted element to have an alternate night position forward.

e. The area forward of the crest must be controlled by friendly forces through aggressive patrolling and active as well as passive reconnaissance means. The enemy must not be allowed to take advantage of reduced observation to advance to a position of advantage without being taken under fire.

f. There are several advantages to a reverse slope defense.

(1) Enemy ground observation of the position including the use of surveillance devices and radar is masked.

(2) Enemy cannot engage the position with direct fire without coming within range of the defender's weapons.

(3) Enemy indirect fire will be less effective owing to the difficulty of observation.

(4) Enemy may be deceived about strength and location of the positions.

(5) Defenders will have more freedom of movement out of sight of the enemy.

g. There are several disadvantages to a reverse slope defense.

(1) Observation to the front is limited.

(2) Fields of fire to the front are reduced.

(3) Enemy is able to launch his attack from a closer range.

h. The decision to position forces on a reverse slope is normally made by the company team commander. He will normally position forces on a reverse slope when:

(1) A unit wishes to surprise or deceive the enemy about the location of its defensive position.

(2) A forward slope might be made untenable by direct enemy fire.

(3) Occupation of the forward slope is not essential to achieve depth and mutual support.

(4) The fields of fire on the reverse slope are better or at least sufficient to accomplish the mission.

(5) The forward slope position is likely to be the target of concentrated enemy artillery fires.

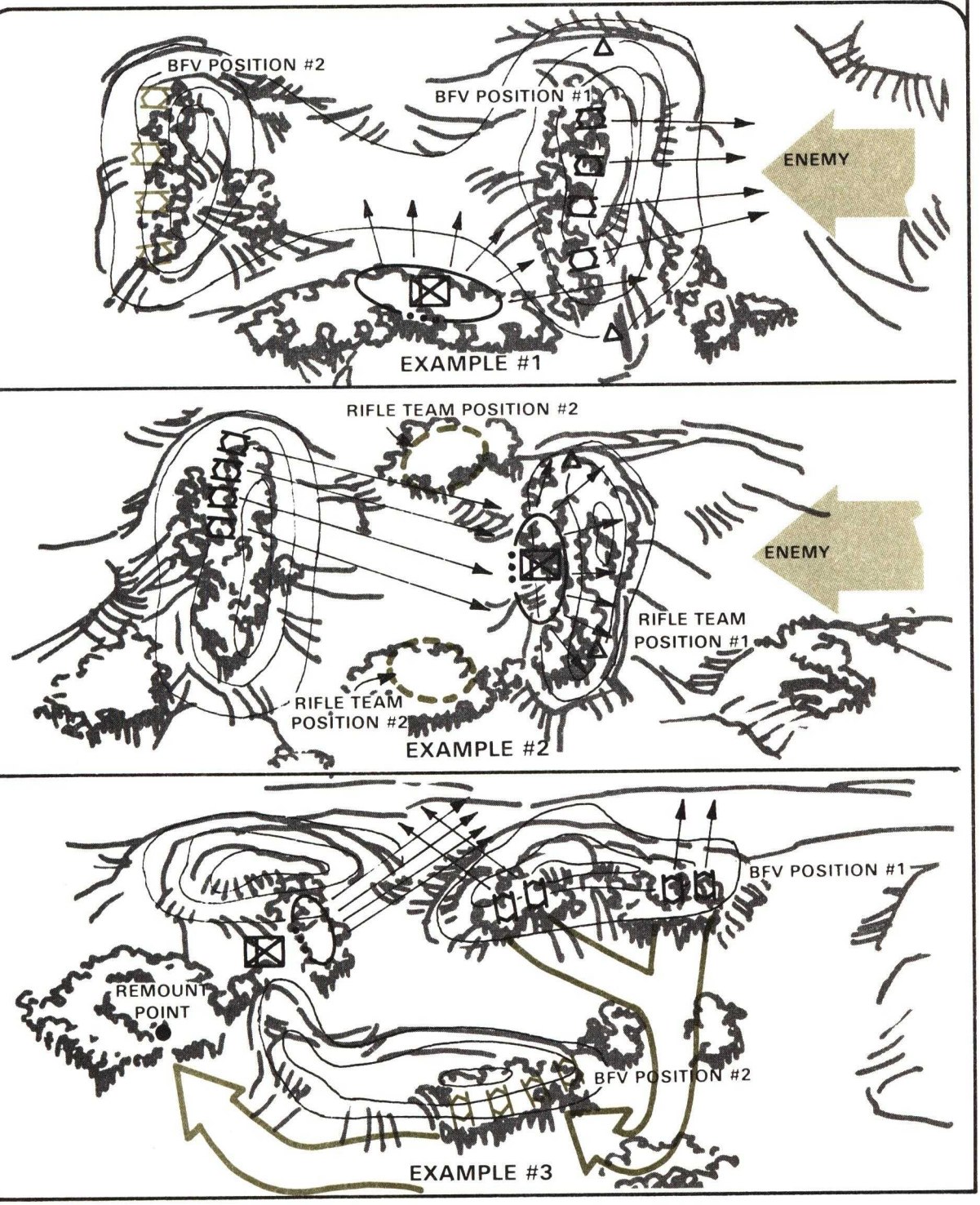
i. The BFV offers the unit additional opportunities regarding positioning that were not possible before. BFVs can initially be positioned forward to take advantage of their protection from artillery and their ability to engage the enemy at long ranges. After an initial engagement, BFVs may move over or around the crest line and through the dismounted infantry on the reverse slope to a position that is either on the flanks or farther in depth to the rear.

j. Obstacles are also necessary in a reverse slope defense. Since the enemy will be engaged at close range by the units on the reverse slope, obstacles should be emplaced that:

(1) Prevent the enemy from closing too quickly and overrunning the positions.

(2) Facilitate disengagement if decisive engagement is not desired.

REVERSE SLOPE DEFENSE OPTIONS



6-12. Vehicle positions.

a. The firepower and long-range accuracy of the 25-mm gun and TOW on the BFV are among the platoon's greatest assets. Based on the guidance of the company team commander and the factors of METT-T, the platoon leader selects positions for his BFVs. Ideally, each vehicle's position provides:

(1) Cover, especially to the front.

(2) Concealment from enemy ground and air observation.

(3) Good fields of fire into the most likely avenues of enemy approach.

(4) Covered and concealed routes to and between positions and to the platoon remount point (if applicable).

(5) Mutual support between positions.

b. Each vehicle should have a primary position and as many alternate positions as needed to cover the entire sector of fire. Supplementary positions should be designated by the company team commander or platoon leader to cover secondary sectors of fire or the next most dangerous avenue of approach. If the BFVs are fighting separated from the dismounted infantry, they must be able to support those positions. All three weapon systems (25-mm gun, TOW, 7.62-mm coaxial machine gun) should be considered when positions are selected and prepared; however, the platoon leader should dictate the primary weapons system to be used at each position. The 25-mm gun and 7.62-mm coaxial machine gun can fire between trees and through light vegetation. Care must be taken not to fire the 25-mm armor-piercing discarding sabot over friendly troops within an arc of 10 degrees on either side of the gun and within 175 meters. The plastic sabot falls away from the projectile when the round is fired and can seriously injure unprotected personnel. The same is true for tank's main gun sabot ammunition out to a distance of 1,000 meters and 70 meters on either side of the trajectory.

(1) TOWs can kill tanks out to 3,750 meters. This is beyond the maximum effective range of threat main tank guns (usually between 1,500 and 2,000 meters). This gives the BFV a stand-off advantage with the TOW. This advantage should be exploited when possible. TOW positions must offer unobstructed fields of fire and a clear backblast area and must fire from a level place of terrain.

(2) The TOW missile has a high kill probability on any tank it hits. This kill probability rises if the TOW hits the tank's weaker side armor. Flank engagements are advisable

because a tank crew's observation and the tank's main gun are normally oriented to the front. Thus, a side or flank engagement reduces the chances of being detected while it improves the chances of a kill.

c. The BFV cannot survive against antiarmor missiles or fire from direct fire weapons larger than 14.5-mm. The two ways the vehicle can overcome this vulnerability is to stay concealed and deliver surprise fire on enemy tanks or other armored vehicles from the flanks and rear or engage at the maximum ranges of the TOW (3,750 meters) or 25-mm (2,200 meters) and displacing to alternate positions before the enemy can place effective fire on the BFV. This movement to alternate positions should be covered by fire by the other BFVs in the fighting vehicle element. In this way, the enemy is placed under a constant stream of fire and is not allowed to acquire and engage targets.

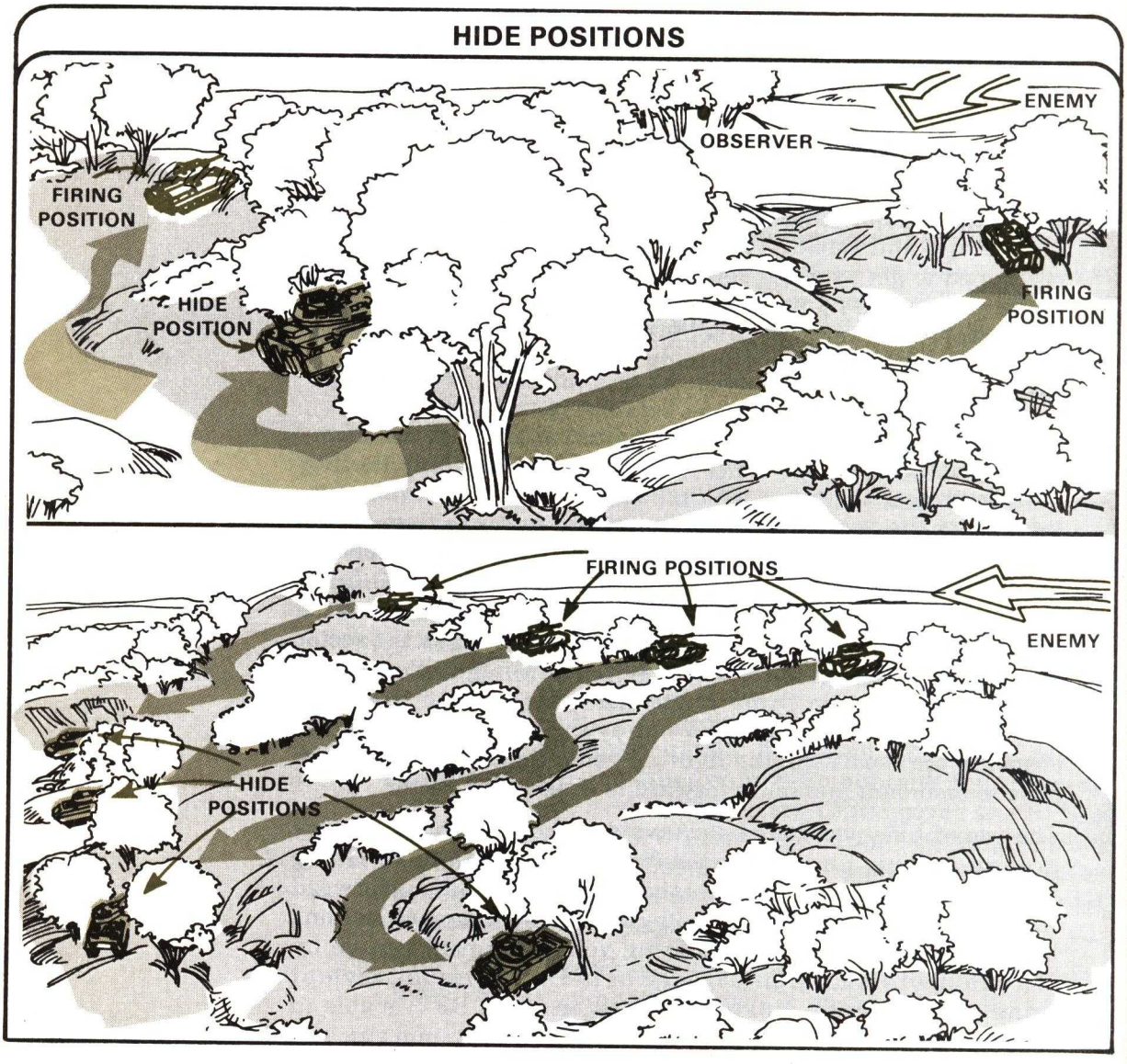
d. The enemy will attempt to suppress the vehicles with direct and indirect fire and smoke. The fighting vehicle element should be positioned to get as much separation as possible between BFVs while still mutually supporting each other. This reduces the chances of two or more BFVs being suppressed by the same enemy fires. (A good planning figure is approximately 100 meters between vehicles.)

e. Hide positions, especially out of the direct fire line of the enemy should be the norm for BFVs in the defense, not only do they provide protection to the BFVs, but they also conceal the true location of the positions thus allowing for surprise fires on the enemy. Firing positions (hull down, if possible) should be prepared when time permits and movement from hide positions to firing positions should be rehearsed. If the BFVs are collocated with the rifle teams, the dismounted infantrymen can observe the sector and call the vehicles forward to preselected firing positions when enemy targets are in firing range. The hide-position technique may be used by individual BFVs or by the entire platoon. If the elements are separated, the fighting vehicle element leader may have to dismount and move forward to observe the sector.

f. The use of hide positions helps avoid early detection by enemy ground and air forces. Routes from hide positions to firing positions should be concealed so that the vehicles moving forward will not be detected and engaged by the enemy. Communications between the observers and fighting vehicle element can be by prearranged visual signals, wire, or radio. By having several firing positions for a single hide position, each BFV is able to engage targets at long ranges with the TOW and 25-mm gun and

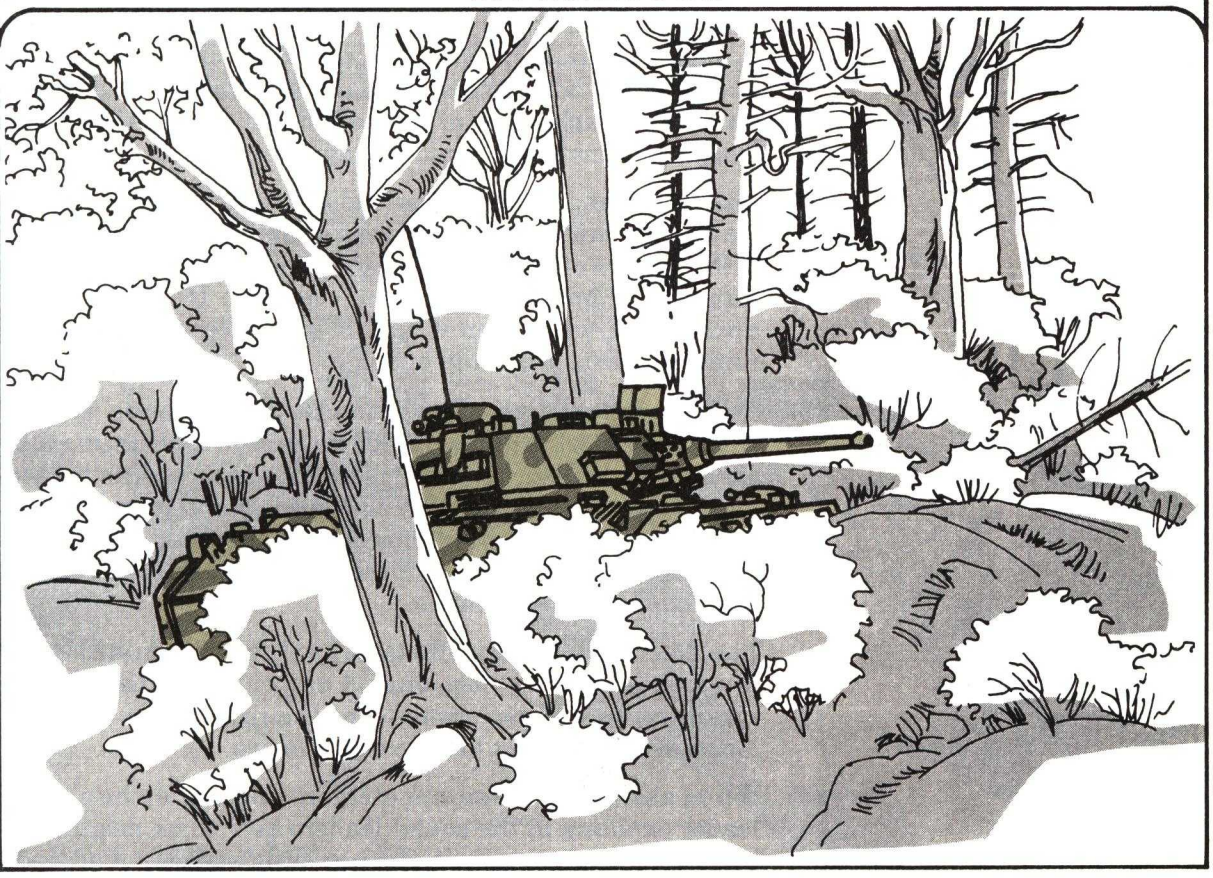
then move to another firing position before the enemy can effectively return fire.

g. To gain protection from intense enemy artillery barrages when the platoon has not had time to prepare adequate fighting positions, the BFVs can move to covered and concealed positions to the flank or rear of the intended position, wait through an enemy barrage and then occupy the position when the barrage ends. The platoon leader positions himself to allow observation of enemy avenues of approach so that he can decide the proper time to move the BFVs into position. As discussed earlier, route selection is critical to avoid disclosure of friendly positions.



h. Hull-down positions should be occupied whenever possible. In such positions, only the turret is exposed to enemy fire, and the hull is protected by cover. By camouflaging the turret, the BFV is then difficult to detect, but turret weapons can be fired. When first occupying a hull-down position, the 25-mm gun should be fully depressed to ensure that close-in targets can be engaged without moving the vehicle.

BFV HULL DOWN



i. Additional protection is provided to the BFV by placing it in a turret-down position. In this position, the vehicle is in a position that gives cover to the front, but the vehicle commander can still see what is to his front. The best way to move into this type of position is to have the driver move up to a hull-down position, where the vehicle will fight, and then have the gunner direct him in reverse until the gunner can no longer see through his sights. At that point, the turret will be covered from the front. To engage, all that has to occur is for the driver to move the vehicle forward until the gunner indicates he has fields of fire.

6-13. Rifle team positions.

a. Rifle teams are best employed against the most dangerous enemy dismounted avenues of approach. Such areas include small towns, rugged terrain, and thick woods.

(1) It is seldom possible to position the rifle teams in areas that will totally preclude the enemy's use of armored vehicles; therefore, the platoon leader must plan for the possibility that his rifle teams may have to fight both a mounted and dismounted enemy threat. Restrictive mounted approaches, such as secondary roads, trails, and roads bordered by natural obstacles, are areas well suited for the rifle team's defense against a mounted enemy.

(2) The full-strength rifle team has six infantrymen. The rifle team members are usually placed in three two-man positions. If the avenue of approach being defended is narrow, then the number of positions may be reduced. If an avenue of approach is wide, then it may become necessary to occupy some positions with only one man.

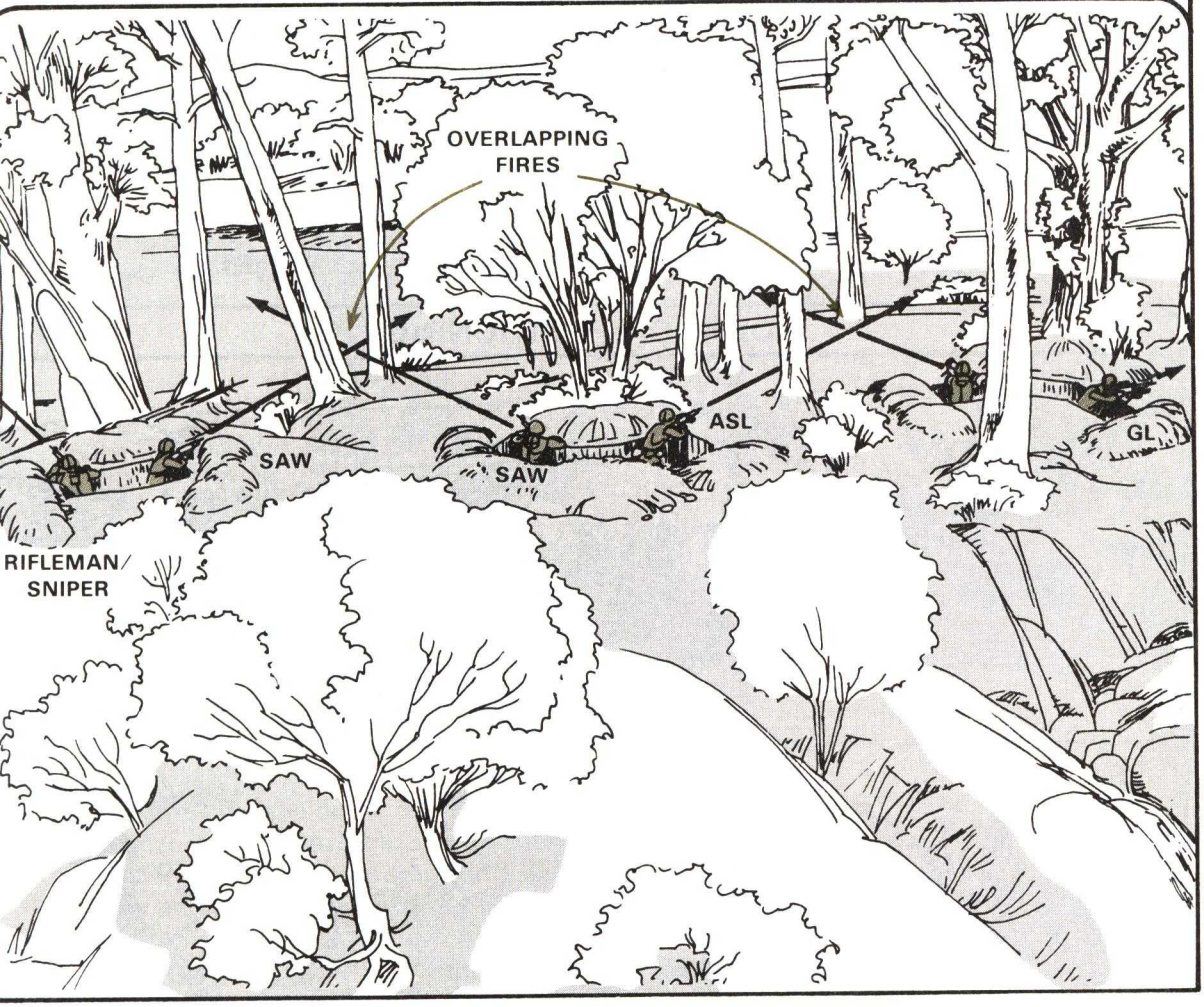
(3) To fight enemy dismounted attacks, the rifle team is armed with two M16A1 rifles, two M203 grenade launchers (mounted on M16A1 rifles), two SAWs (the squad retains its M60 machine gun until the SAW is issued), hand grenades, and antipersonnel mines. Against enemy mounted attacks, the rifle team can employ one Dragon, LAWs, the M203 HEDP round, and antitank mines.

(4) The distance between rifle teams will be determined by the mission of the platoon, enemy capabilities, the terrain, visibility conditions, strength of the rifle teams, and their location with respect to the vehicle crews.

(5) When assigning dismount element positions, the platoon leader explains to the squad leaders how these positions fit into the defensive concept. He then assigns each squad leader a sector, tells him where to position his SAWs (or M60 machine guns) and Dragon, and assigns sectors of fire for each weapon. Platoon and squad leaders must be cautious about organizing a defense around the Dragon. It has a slow time of flight and can easily be suppressed. In addition, only a few (in many cases only one) rounds are generally carried. The dismount element leader ensures that key weapons are mutually supporting and that no gaps appear in the element's sector. Overlapping sectors of observation and fire between adjacent weapons, fighting positions, and teams provide mutual support within the element's sector. This fire

must be enough to stop enemy soldiers from penetrating the position or isolating any part of the dismount element. Protective obstacles should be planned and emplaced to support the fire support plan. Engineer assets, when made available by the company team commander should be used to the maximum extent to emplace obstacles and/or to prepare positions.

RIFLE TEAM POSITIONS AND OVERLAPPING FIRES



(6) Dismounted infantry is normally employed in dug-in positions with overhead cover to minimize vulnerability to indirect fire.

b. Since the rifle teams are normally employed in areas that restrict mounted movement, Dragon positions with suitable engagement ranges may not be available. If this is the case, Dragons initially may be positioned forward or on the flanks of the dismount element to obtain better fields of fire. Dragons should be positioned to obtain flank shots whenever possible. Because of the limited rounds carried for the Dragon, it should often be considered for use with an armor killer team forward with an OP or to the flank of the rifle team and platoon positions. In the absence of Dragon targets or when Dragon missiles have been expended, antiarmor specialists fire their M16A1 rifles. The following elements should be considered in selecting a Dragon position:

(1) Observation to maximum range of the weapon.

(2) Cover and concealment.

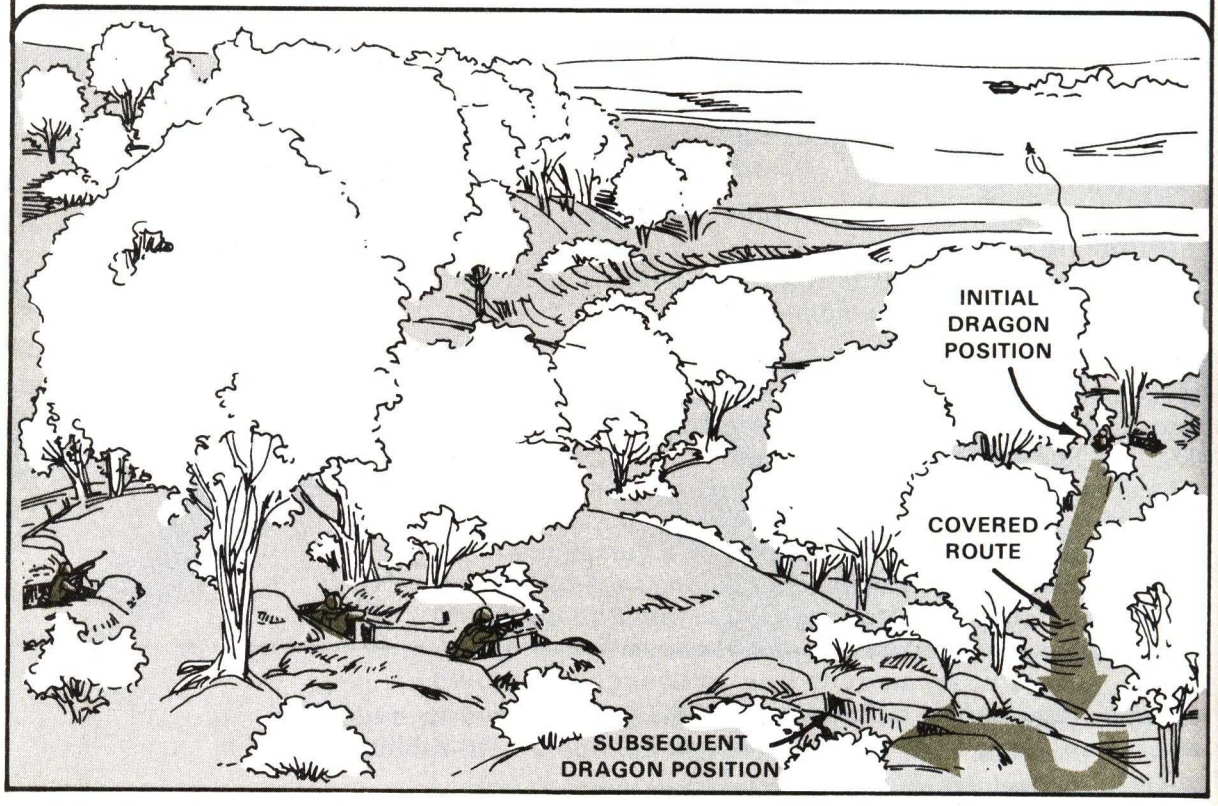
(3) Unobstructed fields of fire (to the flanks, if possible).

(4) Security.

(5) Backblast area.

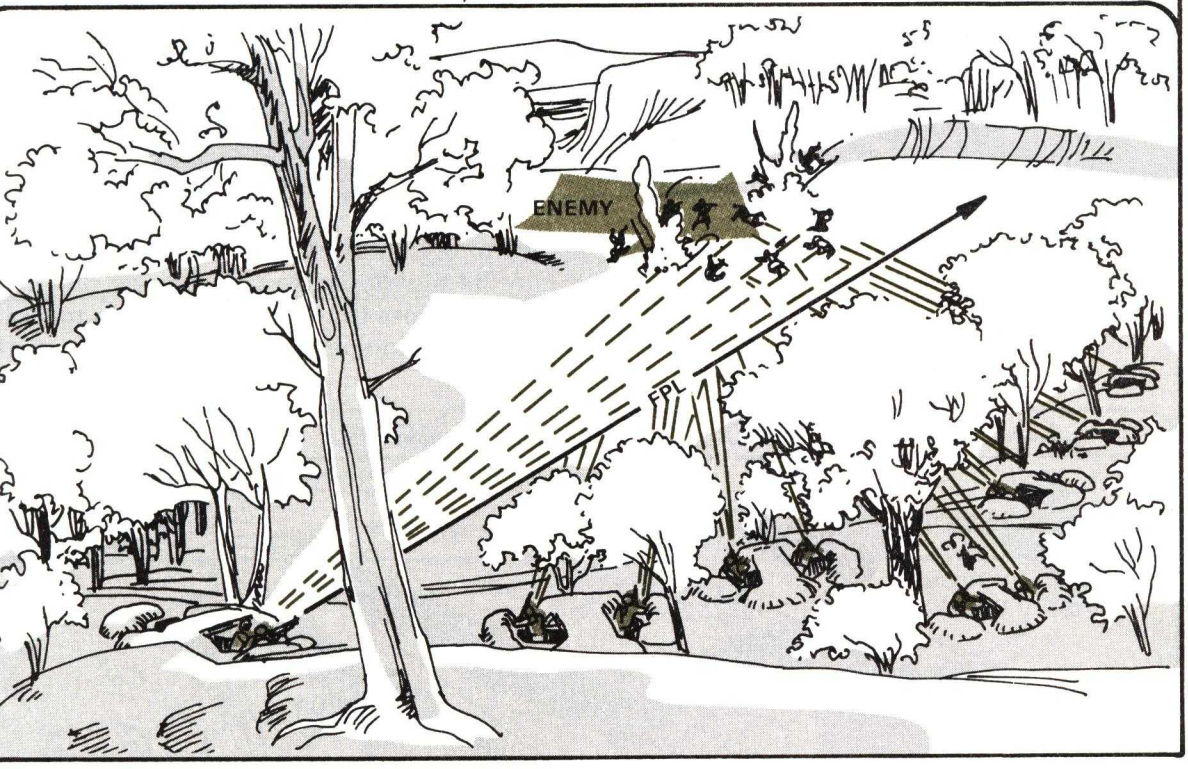
(6) Concealed routes to subsequent positions.

DRAGON POSITIONING



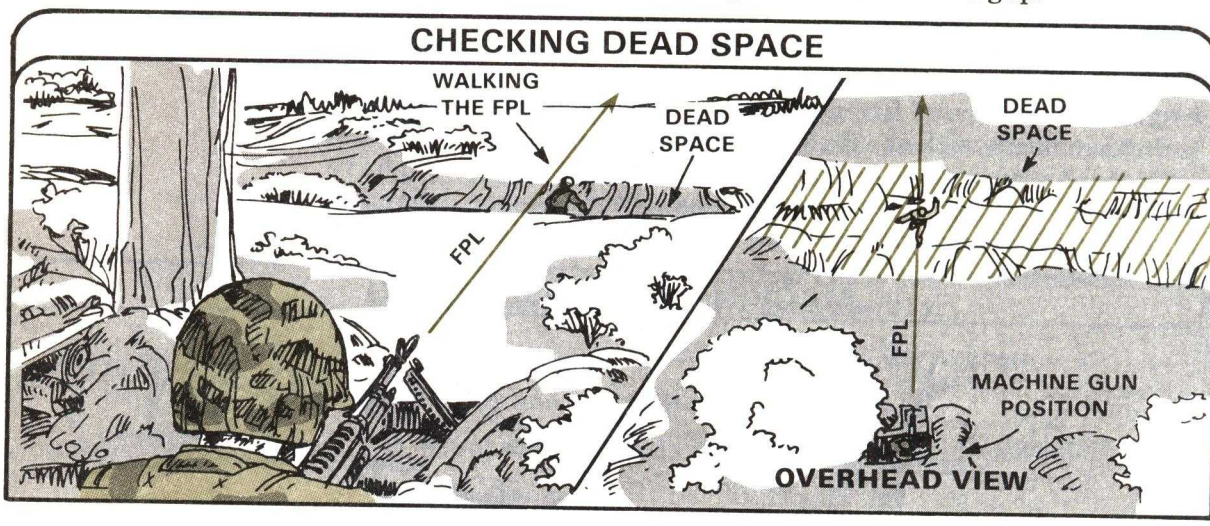
Machine guns are the dismount element's main weapons to stop infantry attacks. As a rule, all the platoon's machine guns are brought to the dismount element's position and are manned. The machine guns should be used on tripods with traversing and elevating mechanisms. Machine guns should be positioned to provide sectors of fire across the dismount element's front, interlocking with the fighting vehicle element and adjacent platoons, when possible. Machine gun positions should have frontal cover. Machine guns are most effective when delivering enfilade fire down the line of the enemy assault formation.

MACHINE GUN POSITIONING

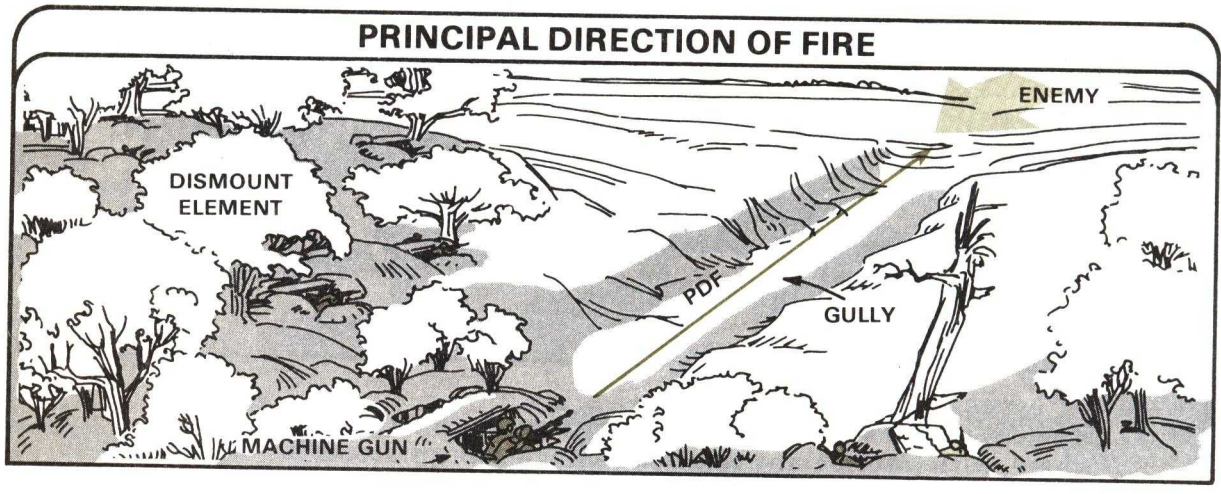


(1) Where it can be done, machine guns are assigned an FPL where, with interlocking fire and obstacles, the platoon leader plans to stop an enemy dismounted assault. Generally, it is across the front of the battle position. A machine gun FPL should supply as much grazing fire as possible. Grazing fire is to be no more than one meter above the ground along the FPL. Dead space is found by having a man walk the FPL. The machine gunner eyes the man walking down the line and records areas grazing fire does not cover. Dead space should be covered by fires from the grenadier using his M203. Additionally, indirect fire, such as mortars, can be planned

on dead space. Where possible, FPLs should overlap so tha the loss of a machine gun will not leave a gap.



(2) Sometimes, a gully or ditch may lead into a position. If so, a machine gun may be positioned to fire directly down the approach rather than across the team's front. This machine gun will be assigned a principal direction of fire down the approach.



(3) A machine gun is always laid on its FPL or PDF unless engaging other targets. The FPL machine guns should be fired all at the same time and on signal.

(4) The M60 requires an assistant machine gunner. He should be assigned a sector that helps secure the machine gun position, cover gaps in the machine gun fire, or overlap the machine gun's sector. If a mounted enemy attack closes within 400 to

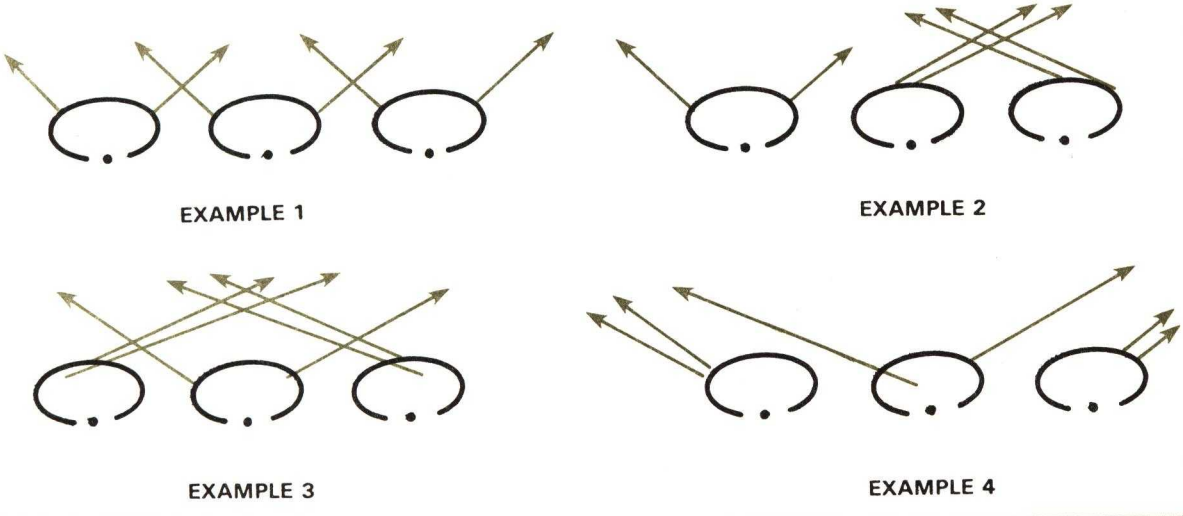
500 meters, the assistant should direct his weapon fire at any exposed enemy track commanders on tanks, BMPs, and BTRs. This would force them to close their hatches; thus, it would intensify their control problems.

. When the M249 SAW is issued to mechanized units, it should be employed in a manner similar to the M60 during the defense. The two automatic riflemen should be positioned to cover the teams' front or to tie in with a flank. Automatic riflemen should be assigned sectors that overlap with other teams' fires. This will supply fire throughout the platoon's sector. Dead space is covered with grenade fire from the M203. The SAWs can be employed either on each flank or in pairs on one flank or the other. When employed singly on each flank, they can either both shoot across the front of the rifle team or be used to tie in with one or both of the flanks. The platoon leader makes the decision on the principal direction of fire.

SAW EMPLOYMENT OPTIONS

RIFLE TEAM OPTIONS

PLATOON OPTIONS



e. The LAWs are the rifle team's primary close-in antiarmor weapon. Each rifle team should have several LAWs in its position. A soldier's sector of fire for the LAW is the same as for his primary weapon.

f. Enemy approaches into the position should be covered with hasty protective mines. To cover dead space that cannot be hit with grenade launchers and to supplement the dismount element's fire, Claymores and other antipersonnel mines can be used. A Claymore must be fired by a soldier who can see its sector of fire. Claymores should be double wired so that they can be fired from either the position they protect or the adjacent position. If more than one Claymore covers the same sector, the squad leader should establish a firing sequence. Since there is only 100 feet of wire with the Claymore, care should be taken to ensure that soldiers in adjacent positions are not in the Claymore's backblast area. Hasty protective minefields must be reported to higher headquarters.

g. Antitank mines are best used for close-in protection against mounted assaults. It is best to place antitank mines on likely tank routes where they can be covered by LAW fire. At least one mine should be emplaced per two-man position; more can be used depending on how vulnerable the rifle team is to armored attack. When mines are used, appropriate reports must be made and locations recorded. All antitank mines should be removed before leaving the position. If this is not possible, such as when a withdrawal is ordered, a report that mines were left in place must be made to proper authority.

h. Each weapon is set up and prepared to fire in its assigned sector. The squad leader and platoon leader check the observation and sector of fire of each position and complete coordination between rifle teams. The FPL or PDF for each M60 is checked by the M60 gunner. This is done by having the gunner sight down the weapon and record the extent of dead space and grazing fire on his range card while another soldier walks the FPL or PDF. The squad leader then allocates the initial ammunition, and supervises preparation of primary, alternate, and supplementary positions for each weapon.

i. The squad leader must concentrate his efforts on controlling the team's fires. He only fires his own weapon to designate targets or in situations where additional firepower is needed.

The platoon leader and squad leaders must be in positions from which they can control their men. The squad leader will normally be in his team's center two-man fighting position. He should position himself where he can see the entire team and its assigned sector. He should also be able to see the dismount element leader. The platoon leader must look for a position that allows him to overlook the element's entire sector or at least the most critical part of it. When possible, he should have visual contact with the BFVs.

Section III. Conduct of the Defense

hen the enemy attacks, BFVs designated to engage at long range, re at priority targets, and then move to alternate positions. Some of ese BFVs may be designated to engage enemy armor with TOWs, hile others engage enemy command and control vehicles, infantry rriers, and ADA weapons with the 25-mm gun. As the enemy adances, friendly tanks begin to engage enemy tanks. Friendly obstaes, covered by direct and indirect fire, break up enemy formations, nd deny enemy elements mutual support. As enemy vehicles move to primary engagement areas, they are engaged on the flanks and ear by BFVs. Dismounted infantry, preferably located on reverse opes for protection or on hindering terrain, engage enemy elements relatively close ranges using their Dragons, LAWs, SAWs, and mall arms. If the defensive plan calls for movement to subsequent ositions to complete the destruction of the enemy, BFVs and disounted infantry move by covered and concealed routes to remount oints and then to subsequent positions. Once the enemy has been estroyed, units reorganize and resupply and prepare for subsequent issions.

-14. How fighting vehicle elements defend.

. The BFV-equipped platoon can defend better against a greater variety of threats than previous mechanized platoons. With the BFV and its 25-mm gun, TOW, and 7.62-mm coaxial machine gun, infantry can now defeat mounted attacks at longer ranges and win the close-in fight.

(1) **TOW.**

(a) Primary targets for the TOW are enemy tanks. Because of the small number of TOW rounds on the BFV, it is

critical not to waste missiles on targets that can be killed by other weapons. The basic rule for TOW use is to engage enemy tanks as soon as they are in range and on the flanks. Accurate preparation of a range card aids the gunners and Bradley commanders in determining that enough exposure time is available for a hit.

(b) When a TOW is fired, the BFV must move to an alternate firing position to avoid enemy return fire. Once two TOWs have been fired, the launcher must be reloaded. The BFV should move to a hide position, reload, and then move to an alternate firing position. The platoon leader must be kept informed of missiles on hand for firing. The platoon leader or platoon sergeant should request resupply during any lull in the battle, even if only a few missiles are needed.

(2) **25-mm gun.** The 25-mm gun, firing APDS ammunition, can defeat the BMP1 and other light armored vehicles (BTR, BRDM) out to 2,200 meters. By engaging BTRs and BMPs as they come into range within the platoon position, the defender can separate the enemy infantry from his tanks by forcing him to dismount. Once dismounted, the enemy infantry is vulnerable to small arms and indirect fires. The 25-mm gun can continue to engage BTRs or BMPs, or switch to HEI-T to destroy or suppress dismounted infantry or thin-skinned vehicles. As with the TOW, time to reload the weapons system must be planned. APDS should be reserved for targets that cannot be killed with HEI-T. Also, HEI-T should be held for targets that cannot be killed or suppressed with the 7.62-mm coaxial machine gun. HEI-T and APDS should be reloaded at every chance to avoid running out of ammunition during an enemy attack. Adding ammunition to existing links is quicker than loading empty weapons. When changing from one type of 25-mm ammunition to another, the first round fired will be of the type previously selected because that round is already chambered.

(3) **7.62-mm coaxial machine gun.**

(a) The coaxial machine gun is effective in suppressing ATGMs and enemy machine gun positions, defeating thin-skinned vehicles, forcing armored vehicles to button up, and engaging troops on foot or riding on the outside of tanks. The 7.62-mm coaxial machine gun

should be used whenever possible to conserve the larger caliber ammunition.

(b) Keeping the coaxial machine gun at maximum ammunition load is just as critical as for the 25-mm gun. It should be reloaded to capacity at every chance.

b. The BFV leader moves to an alternate firing position to avoid effective enemy fire or to gain a better firing position in the desired sector of fire or engagement area.

(1) This movement may be directed by the fighting vehicle element leader or may be done automatically by the squad leader if his position has been discovered and targeted by the enemy. **The fighting vehicle crew must avoid multiple engagements from the same firing position** when the enemy is returning effective fire. Movement of individual vehicles must be coordinated so that all vehicles will not be out of firing positions at the same time. Normally, movement to supplementary positions is directed by the platoon leader. This movement normally involves all parts of the fighting vehicle element moving at the same time, but it may be done by single BFVs or by pairs.

(2) If effective enemy fire forces a BFV to leave its position, the onboard smoke-grenade launchers or smoke-screen generator can be used to conceal the vehicle's movement.

c. If the platoon is ordered to move to another battle position, and if its elements are located together, the fighting vehicle element may continue the fight while the rifle teams remount the vehicles. When the elements are separated, the dismount element should notify the fighting vehicle element leader before movement to the remount point. The BFV then moves to the remount point to pick them up. If either element becomes decisively engaged, then the platoon must disengage. To avoid decisive engagement, the platoon must move quickly. An enemy force traveling at 20 kilometers per hour moves 1 kilometer in only three minutes. To slow the enemy, the fighting vehicle element increases its rate of fire and the FO adjusts for indirect fire and smoke on the enemy. Emplaced barriers and mines also will slow the enemy attack. The BFV's smoke-screen generators, if needed, can be used to supplement the smoke provided by indirect fire. Remounting considerations are explained in greater detail in Section V, Disengagement.

6-15. How dismounted elements defend.

a. **Defending against a dismounted attack.** During an attack, the enemy infantry will advance as far as possible mounted in BTRs and BMPs. When forced to dismount, usually 300-400 meters from our position, the infantry will continue the attack on foot supported by indirect fire, tanks, BTRs, and BMPs. Indirect fires should be placed as fast as possible on the enemy's dismounted forces.

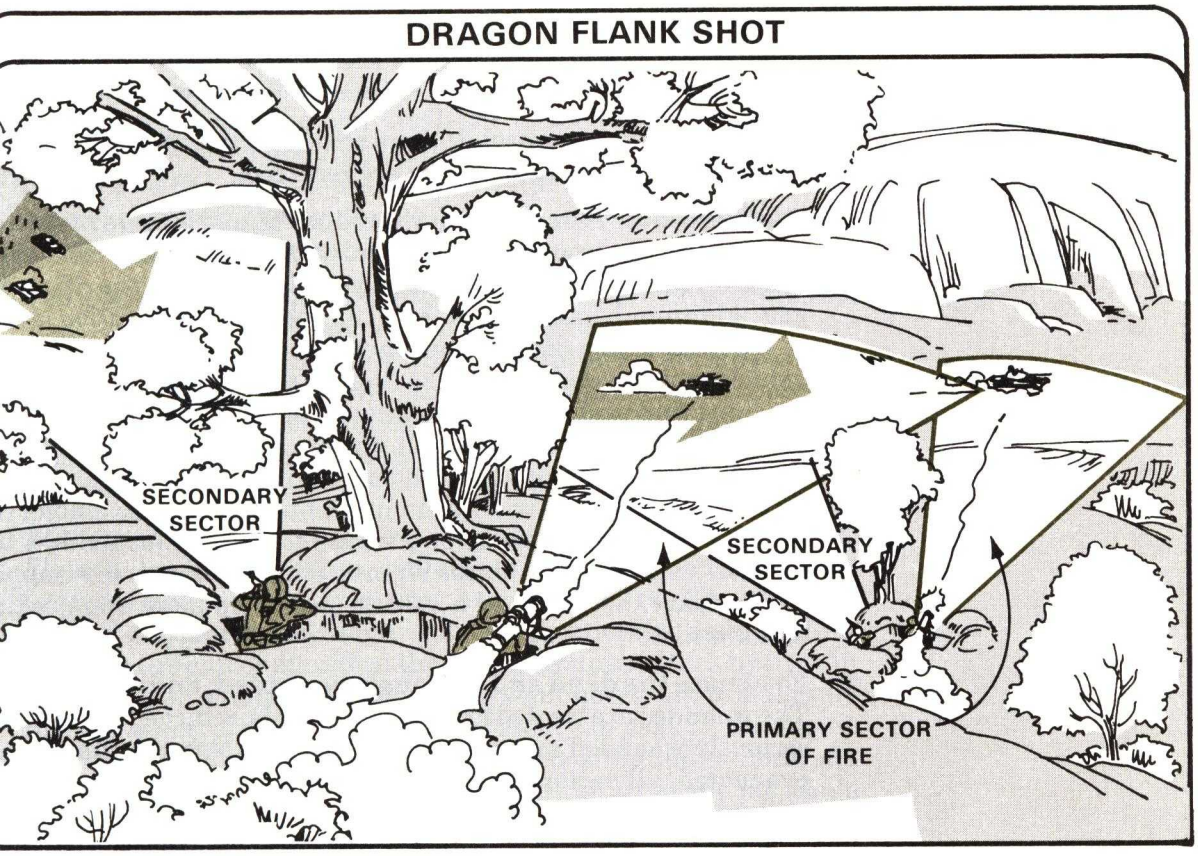
(1) The dismounted elements should engage the attacking enemy force as soon as it comes within the element's sector of fire. Targets in the primary sector of fire have priority. But, when no targets show in the primary sector, targets in the secondary sectors are engaged.

(2) As the enemy begins the assault, the platoon leader and his FO should call for all FPFs. A heavy stream of fire is maintained until the enemy assault is halted. The rate of fire is then reduced to save ammunition.

(3) When the enemy assault is repelled, the platoon leader reorganizes his positions. He gets a status report from each squad, ensures that key weapons are manned, designates replacements for key leaders, and reports his status to the company team commander. Retreating enemy forces are often disorganized and exposed to fire. The platoon leader should keep calling for indirect fire and be prepared to quickly remount the BFVs and counterattack, if ordered to do so.

b. **Dismounted infantry defending against a mounted attack.** Riflemen and SAW gunners should direct their fires at exposed crew members to force them to close their hatches, and at dismounted infantry moving along with the tanks. If the enemy infantry can be separated from his tanks, the tanks become vulnerable to infantry antiarmor weapons.

(1) Dragons are used to engage enemy tanks as soon as the tanks enter their sectors of fire. They may be fired at enemy tanks in secondary sectors of fire when no tanks are seen in primary sectors of fire. When engaging targets, antiarmor specialists should make maximum use of the frontal protection of their positions and try for flank shots at target tanks. Dragon engagements should be controlled by squad leaders because of the scarcity of ammunition.



(2) LAWs are fired at enemy armored vehicles that close on the rifle team's position. Squad leaders should hold LAW fire until enemy vehicles come into the protective minefield, or close enough so that LAW hits can be made on the sides of the target vehicles. A squad leader will normally have better results if his entire team hits one enemy tank with surprise volley or pair fire.

(3) Squad leaders fire dual-purpose M203 ammunition at BTRs and BMPs, preferably from the sides. As with the LAW, they should wait until the targets are close enough to ensure a hit.

6-16. Preparing for the next attack.

When an enemy assault is repelled, leaders must prepare to counterattack, to continue the defense in place, or to displace. If the platoon leader is directed to hold his present positions, the platoon must quickly prepare for more enemy attacks. The platoon must:

a. **Reestablish security.** If OPs withdrew to the battle position, they are sent back out. If any of the OP personnel did not return or are wounded, they must be accounted for or replaced.

b. **Replace key personnel.** If there are casualties among leaders or critical weapon operators, they are replaced.

c. **Redistribute/resupply ammunition.** Squad leaders inventory and redistribute remaining ammunition. Ammunition from casualties is redistributed. If the squad vehicle is nearby, the rifle team gets additional ammunition from the vehicle. Ammunition status is reported to the dismount element or platoon leader. Fighting vehicle crew leaders reload the 25-mm gun and 7.62-mm coaxial machine gun and make a quick count of remaining ammunition and missiles. Ammunition and missile status is reported to the vehicle element or platoon leader.The fighting vehicle element leader may also redistribute ammunition and missiles among the BFVs. The platoon leader or platoon sergeant consolidates the platoon's ammunition status reports, and then requests resupply. If necessary, he will send a vehicle to pick up more ammunition and missiles.

d. **Evacuate the dead and seriously wounded, and enemy PWs.** The wounded are treated and, when possible, returned to duty. The seriously wounded are evacuated to the rear. After casualties are evacuated, all sectors of fire must be checked to ensure they are still covered. Leaders must ensure that positions are readjusted, as needed, to cover any gaps left by casualties or disabled BFVs. Enemy prisoners are evacuated to the rear, after a quick interrogation and search for information that might be of immediate value to the platoon.

e. **Replace camouflage.** When the situation allows, wilted material is removed and replaced with fresh camouflage. A position should not be overcamouflaged.

f. **Replace obstacles.** If enemy forces have withdrawn, obstacles, mines, and early warning devices should be replaced. This is a risky task, especially if there are enemy snipers around. Troops must be careful; smoke can be used to cover movement. Obstacles may have to be replaced after dark.

6-17. Counterattack.

During the conduct of defensive operations, leaders at all levels must seek opportunities to attack. The counterattack is an excellent way to seize the initiative, to destroy or disrupt the enemy, or to gain key terrain.

. Platoons normally counterattack to regain all or a portion of the platoon position. These counterattacks are often done by massing direct fires and calling for indirect fires to eject the enemy from the position before he can establish himself. Counterattack by maneuver is often done with only a few men, especially if other portions of the platoon position are still defending. If the BFVs are nearby, they can be used to fire or maneuver to aid in restoring the platoon position.

. The platoon sometimes counterattacks as part of a company, company team, or battalion task force. Some counterattacks are planned in great detail. Others, like hasty attacks, are not planned but are executed rapidly when the right conditions exist. Counterattacking forces must complete their tasks and regain covered positions before overwatching or following enemy echelons can interfere.

. At the platoon level, counterattacks may resemble a hasty attack. Platoon leaders make an estimate of the situation and react immediately to catch the enemy at a weak point. The preferred method of counterattacking involves repositioning a unit so that effective fire can be placed on the enemy (counterattack by fire). In this case, the unit moves only to the extent necessary to attack by fire. However, at times it may be necessary to assault the enemy and drive him off a piece of terrain. This situation is normally associated with the enemy seizing a part or all of the platoon's defensive positions. To restore the continuity of the defense, the enemy must be expelled. This requires decisive action to hit the enemy before he has an opportunity to react.

.. The platoon leader's decision to counterattack must not be reckless. It must involve an understanding of the higher (company) commander's intent and the use of good judgment before taking a calculated risk. For example, the company commander may describe the necessity of retaining a specific piece of terrain that is critical to the battalion's defensive plan. If this terrain is lost, but can be regained through the immediate action of a platoon, the platoon leader should seize the initiative and retake the terrain. Where feasible, the platoon leader should take action based on the commander's direction; however, in the absence of specific orders, the platoon leader should have the latitude to take the initiative.

Section IV. Limited Visibility Operations

Mechanized infantry platoons and squads frequently will be required o conduct defensive operations during limited visibility; therefore, hese operations should be emphasized during training exercises. This

section provides doctrinal guidance on the conduct of defensive operations when visibility is limited.

6-18. Limited visibility considerations.

a. Limited visibility conditions refer to darkness, fog, rain, smoke, dust, or any battlefield obscurants that may be employed. These conditions may require the use of image intensifiers, thermal sights, binoculars, and artificial illumination. Some devices, such as image intensifiers and thermal sights, should be used together so that the capabilities of one system can offset the disadvantages of the other. During heavy rain, snow, fog, smoke, and dust, the effectiveness of night vision devices will be degraded, and increased security measures must be implemented, such as the establishment of more observation posts, patrols, and remote sensors (see Appendix N).

b. Limited visibility conditions afford platoons and squads some concealment from enemy observation and reconnaissance. To maximize the advantages of limited visibility, individual soldiers and leaders must consider several factors.

(1) At night, objects may appear distorted. Ranges are difficult to estimate and dark objects appear more distant than light objects. To compensate for these conditions, use either the scanning or off-center viewing techniques outlined in FM 21-75, Chapter 4. On a clear night, the naked eye can distinguish land relief and coloration up to 400 meters. With a full moon, the naked eye can spot a moving man at approximately 240 meters and with the aid of binoculars, at 700 meters. Haze, smoke, dust, and fog limit observation further.

(2) During daylight, haze, smoke, and fog may prevent the use of image intensification devices. Also, the effectiveness of thermal sights is degraded. Provisions for day limited visibility operations must be made. Range cards must be prepared so that personnel can cover main avenues of approach and obstacles.

(3) Physical and psychological factors must also be considered in limited visibility operations. Darkness may stimulate the imagination and thus burden the nervous system, creating a feeling of insecurity that could lead to panic. The sensitivity of the eyes and ears during night differs from day. Soldiers using STANO devices should have the opportunity to rest at least every 30 minutes. To avoid eye fatigue, operators should be rotated every 1 1/2 to 2 hours. Platoon and squad sleep

plans should be established and enforced; otherwise, the individual soldier's fighting ability will be degraded.

(4) At night, sound can be heard farther, but the direction of sound is difficult to determine.

-19. Positions.

When occupying a battle position during good visibility, the platoon leader must be prepared for limited visibility by predesignating positions for vehicles and crew-served weapons. Whenever possible, vehicles and crew-served weapons should be placed in positions that will preclude repositioning for limited visibility conditions. If repositioning of vehicles and crew-served weapons is necessary, the distance these weapon systems are to be moved must be kept to a minimum. The routes to be taken and positions to be used during limited visibility must be predesignated, and the movement must be rehearsed during good visibility. Dragons' thermal sights have limited capability to fire through smoke and haze.

During limited visibility, a platoon leader may have to reposition rifle teams and BFVs closer to designated engagement areas. The use of alternate engagement areas may be necessary to acquire targets if the assigned engagement area will be beyond the range of observation. Another reason for repositioning forces is to cover gaps between units or to cover alternate avenues of approach that are created by the reduced effectiveness of weapon systems.

The repositioning of forces, if necessary, should take place soon after the beginning of limited visibility conditions. Moves are along previously reconnoitered routes into predesignated positions.

-20. Command and control.

The basic command and control consideration at platoon level is control and synchronization of the vehicle and dismount elements. Since the platoon leader normally locates with the maneuver element, if one is used it will most likely be the mounted element. The platoon sergeant will then locate with the dismount element.

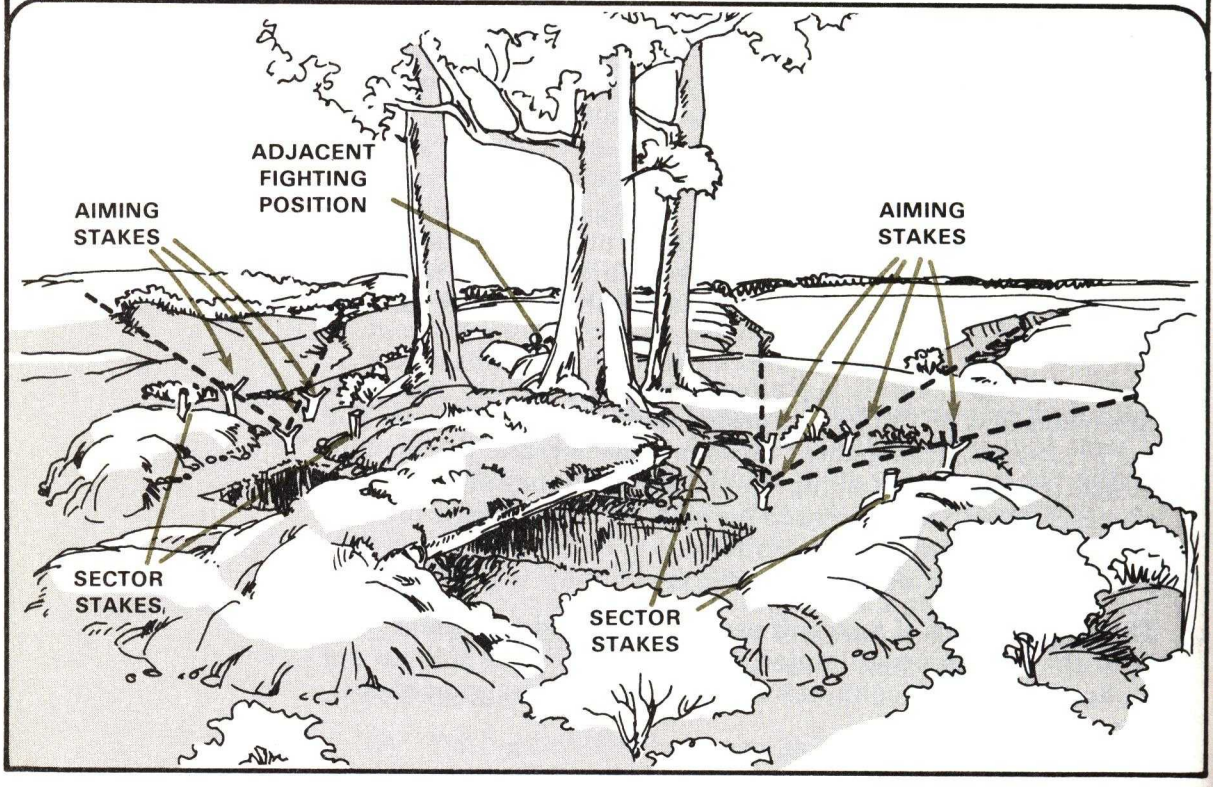
In the defense, command and control are vital and the most difficult to achieve and maintain under limited visibility conditions. Good command and control begins in the fighting

positions. Each fighting position must have the following aids for controlling fires.

(1) **Aiming stakes** — used to assist the soldier in firing his weapon on dangerous avenues of approach.

(2) **Sector stakes** — used on the right and left to define the sector of fire. They also prevent accidental firing into adjacent positions.

AIMING STAKES AND SECTOR STAKES



c. The use of range cards and squad and platoon sector sketches for control is essential. It is through the integration of such control measures that a coordinated defense is possible. Target reference points (TRPs) are especially necessary for the 25-mm and TOW systems because of the difficulty of estimating distances at long range. TRPs should be selected out to the maximum ranges of the systems either through a careful map study or by pacing or driving the distance. If tanks are available, their laser range finders may be used to mark or verify TRPs.

d. The platoon leader may use additional control measures such as:

(1) **Tracers** — to identify point or area targets.

(2) **Pyrotechnics** — to indicate the lifting, shifting, or concentrating of fires. (Other control measures are found in Appendix C.)

-21. Coordination.

Proper coordination must be made with adjacent platoons that are on the left and right flank of the platoon's battle position. This coordination includes the sectors of fire for night firing of crew-served and vehicular weapon systems, repositioning of forces during limited visibility, and security measures necessary to secure the front and flanks.

The platoon leader must position his STANO equipment and night vision devices so that overlapping fields of observation are established within the platoon's sector of fire.

The capabilities of the integrated sight unit must be realized. It is important that this system be manned and that a surveillance plan be implemented to ensure that sectors of observation overlap. Operation of the ISU requires starting the engine of the Bradley approximately every two hours to keep the batteries charged. All Bradleys should be started at the same time to prevent the enemy from knowing how many vehicles are on the position (see Appendix N for silent watch technique).

-22. Occupying a defensive position.

Generally, the techniques used to occupy a defensive position during good visibility apply during limited visibility. Because of problems of command and control, whenever possible, the dismount element and BFVs should be placed on the same battle position.

A defensive position to be occupied should first be reconnoitered during good visibility. Both the reconnaissance and the occupation must be done with stealth and under enforced light and noise discipline.

During the reconnaissance, the platoon leader:

(1) Ensures that no enemy forces occupy the proposed battle position.

(2) Identifies enemy avenues of approach (mounted and dismounted) and potential enemy overwatch positions.

(3) Chooses engagement areas if they are not assigned by the company commander.

(4) Chooses primary, alternate, and supplementary positions for the rifle teams and fighting vehicles.

(5) Identifies dead space in front of positions and formulates a plan on how to cover it.

(6) Chooses locations for observation posts and the command post.

(7) Confirms locations of adjacent platoons and companies.

(8) Chooses target reference points, sectors of fire, and other control measures.

(9) Chooses routes into and out of positions.

d. A reconnaissance conducted during limited visibility must accomplish the same objectives as above. Because of the limited range of observation, the platoon leader's task must be accomplished with great care. He must ensure that his reconnaissance is done with a STANO device of similar capabilities as that of his weapon systems.

e. If time permits, the platoon leader should go forward, conduct his reconnaissance, return to the platoon position, and bring the squad leaders forward in his BFV. He should assign rifle team and fighting vehicle positions, sectors of fire, TRPs, and engagement areas. The squad leaders should then return to the platoon position and issue orders for the occupation and preparation of forward positions. The platoon then moves forward.

f. If there is not enough time for the tasks above, the platoon leader may take his squad leaders forward during the initial reconnaissance, or bring the entire platoon forward to an assembly area in the vicinity of the defensive position, and then conduct his reconnaissance with his squad leaders.

g. As the platoon members occupy the defensive positions, they accomplish the work priorities.

h. The platoon leader must carefully consider the method of employing the dismount element and the BFVs. Whether to fight

both elements from different battle positions or the same battle position must be closely examined. During limited visibility, the occupation of battle positions and the controlling of fires is simplified if both elements are on the same battle position.

i. All activities normally associated with the occupation of defensive positions during good visibility are done during limited visibility. However, techniques may change to compensate for the limited visibility condition, such as having to use night vision devices to establish sectors of fire, and actually walking the FPL and PDF. Noise and light discipline must be strictly enforced. Also, face-to-face coordination with adjacent platoons must be conducted and sectors of fire coordinated. This coordination should effectively tie in overlapping sectors of fire and observation with weapon systems and night vision devices. When good visibility returns, defensive positions are adjusted as necessary.

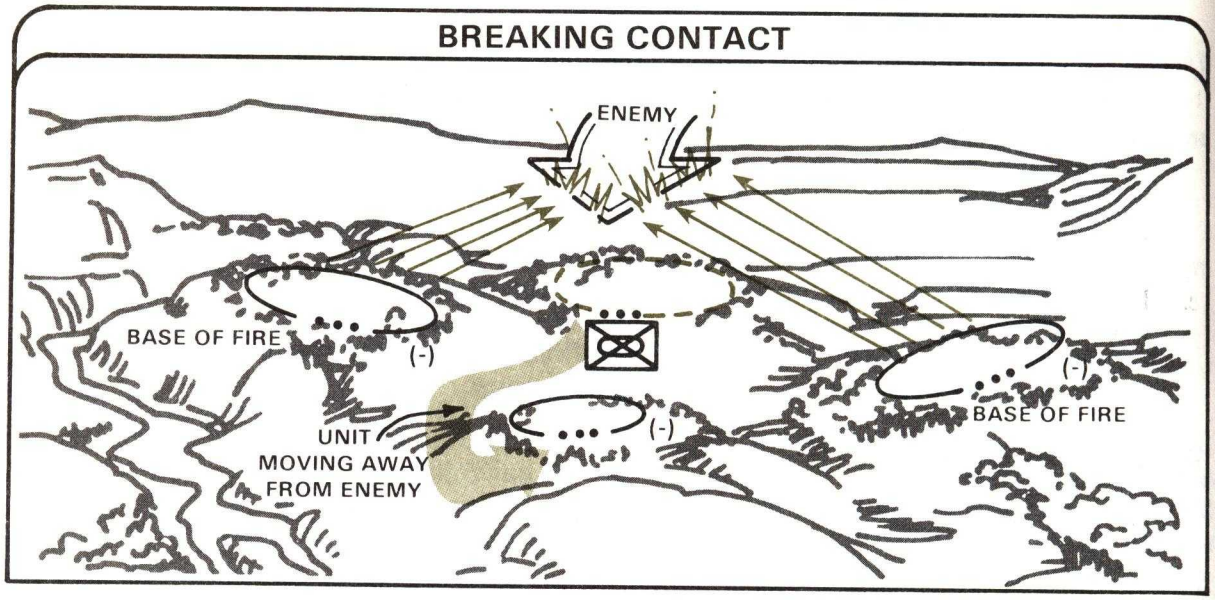
Section V. Disengagement

As the enemy closes, and based on orders from the task force commander, the company or company team commander will decide how long to hold defensive positions. The company or company team may be required to remain and fight as long as possible, or it may be required to disengage and displace to subsequent positions. A platoon, as part of a company or company team, may break contact with the enemy to defend from another battle position, to prepare for a counterattack, to delay, to withdraw, or to prepare for some other mission.

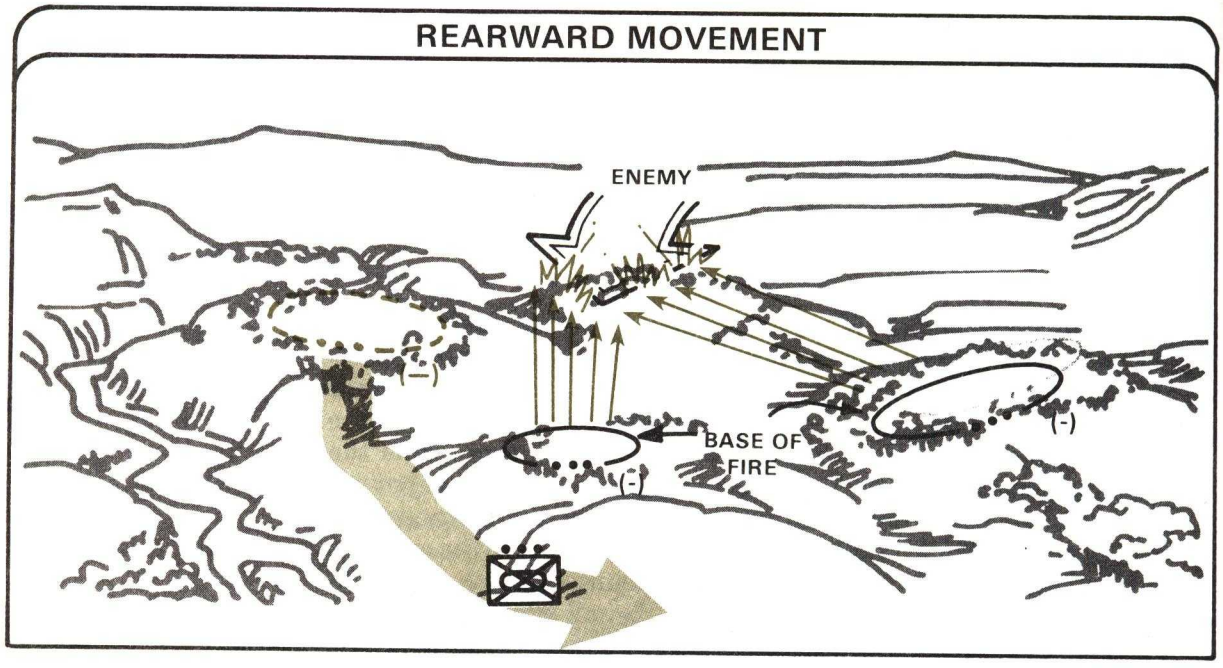
6-23. Fire and movement.

a. Fire and movement to the rear is the basic tactic for disengaging. All available fires are used to stop the enemy and allow platoons to move away from the enemy. The company or company team commander may move his platoon and mass fire to stop or slow the enemy advance before beginning the movement away from the enemy. A heavy volume of antiarmor fire will force the enemy to dismount his infantry and thus slow his mounted advance. Artillery and mortar HE fire and smoke will also add to the enemy's confusion, slow the momentum of his mounted attack, and help conceal the movement of friendly units. Small arms and indirect fire can be used against an attack by dismounted troops.

(1) A base of fire is formed to cover other units moving away from the enemy. One unit acts as the base of fire, holding off the enemy by fire or holding terrain that blocks his advance, while other units move to break contact.



(2) When the moving units get to the next position, they provide a base of fire to cover the rearward movement of the forward unit.



(3) Fire and movement is repeated until contact with the enemy is broken, until the units pass through a higher level base-of-fire force, or until the units are in the next position to resume their defense.

b. When facing a mounted enemy attack, antiarmor weapons are the most effective weapons for the base of fire. For that reason, movement of those antiarmor weapons must be closely controlled. Normally, ITVs move back first, followed by BFVs, then tanks.

c. In restrictive terrain, when facing a dismounted enemy attack, or with visibility limited, the ITVs and tanks may have to move first, covered by the infantry and their BFVs.

d. The tactics used by the platoon to disengage from the enemy can differ according to how the platoon is deployed, the company or company team plan for disengagement, and other factors; but some actions apply in all cases:

(1) Maximum use is made of the fighting vehicle's firepower to cover rearward movement.

(2) BFVs should back out of position and move, keeping a terrain feature between the vehicle and the enemy.

(3) The turret weapons should remain pointed in the direction of the enemy. Firing port weapons should be manned and ready to fire, especially from the rear firing ports. This is critical when the squad is operating at reduced strength.

(4) Rapid movement and an effective base of fire are the keys to a successful disengagement.

6-24. Plans for a disengagement.

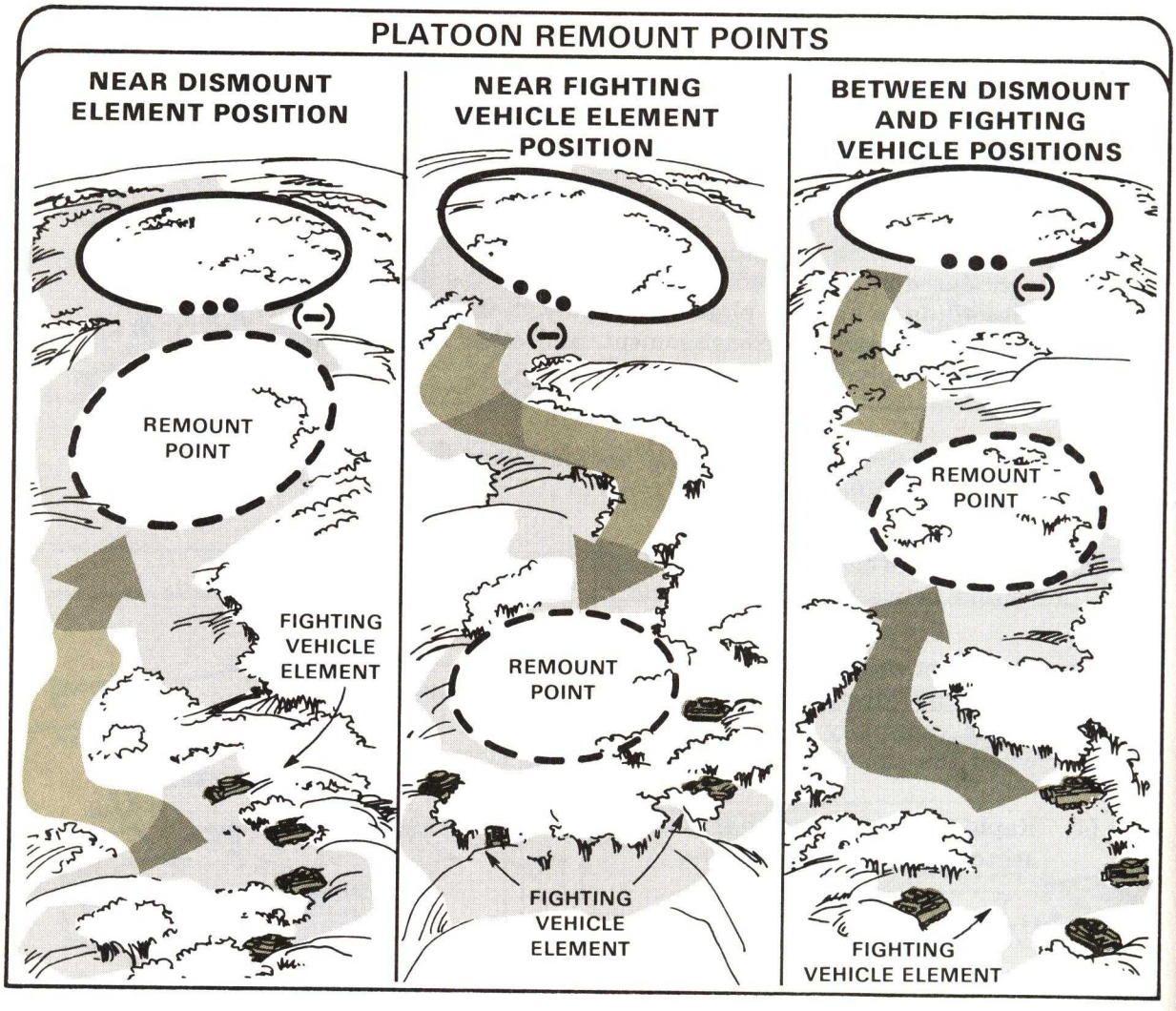
a. Plans for a disengagement may be part of any defensive plan. If rifle teams are deployed, a plan for rapid remounting must be made. Keeping the platoon mounted or placing the rifle teams with the fighting vehicles simplifies this process.

b. When the platoon employs the fighting vehicle and dismount elements on separate positions, platoon remount points and routes to the remount points must be chosen. In addition, use of routes must be rehearsed. The platoon remount point can be:

(1) Near the dismount element position.

(2) Near the BFV position.

(3) Between the two.



c. Within the remount point, covered positions for vehicles and dismounted infantry should be chosen that allow for easy remounting even during limited visibility. Squad leaders must be sure their men know the location of the remount point, where the squad vehicle is at that point, and routes to the point. Routes to the

remount point should be covered and allow speedy movement for both elements. Considerations for planning are:

(1) BFVs can move faster and have more protection from enemy small arms fire and artillery fragments than dismounted troops.

(2) The BFVs often will shift from one firing position to another, so routes must be planned from each position to the remount point.

(3) Following routes and finding remount points will be difficult in the heat of battle and even more difficult during limited visibility. As a minimum, routes should be marked and reconnoitered by the vehicle drivers and Bradley commanders, and by the squad leaders/assistant squad leaders.

6-25. How the dismount element disengages.

When the dismount and fighting vehicle elements are separated, there are three ways the dismount element can disengage. Simultaneous disengagement (moving all teams at the same time) can be used when the element is covered by another force. When the dismount element must cover its own movement, it disengages by teams or by thinning the lines.

a. **Simultaneous disengagement.**

(1) When the rifle teams simultaneously disengage, they assemble and move as one element as fast as possible to the remount point, using movement techniques.

(2) Simultaneous disengagement is favored when rapid movement is critical, the disengaging element is adequately covered by overwatching fires, and the enemy has not closed on the dismount element or cannot fire effectively at it or there are significant obstacles to delay the enemy. Simultaneous disengagement can be used when the dismount element can move before the enemy can close on the position because of an obstacle or distance between the dismount element and the enemy. It can also be used when other units of the company, company team, or battalion task force are adequately covering the disengagement.

b. **Disengagement by rifle teams.**

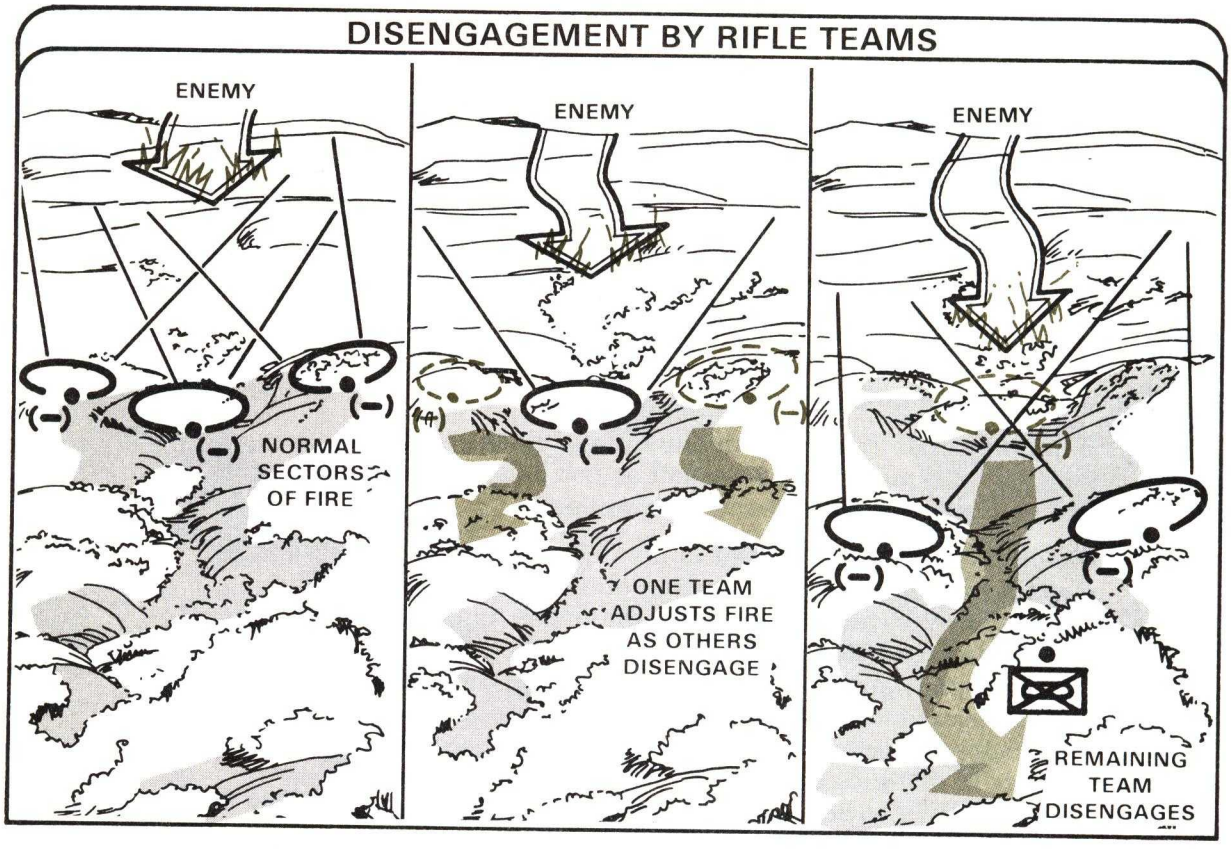
(1) When the dismount element must cover its own movement, one or two teams stay in position as a base of fire. The rest of the dismount element moves to the rear. Teams left in

position must fire into the entire element's sector to cover the movement of the other rifle teams. Sectors of fire are adjusted as necessary to get better coverage of the element's sector.

(2) The teams left in position disengage when the rest of the element is in position to cover their disengagement.

(3) Movement to the rear by alternating teams is continued until contact is broken. Once contact with the enemy is broken, the disengagement is complete and the dismount element moves to the remount point using proper movement techniques.

(4) Disengagement by rifle teams has the advantage of simplicity in that the rifle teams stay together. It is used when one or two teams can effectively cover the entire dismount element's sector.



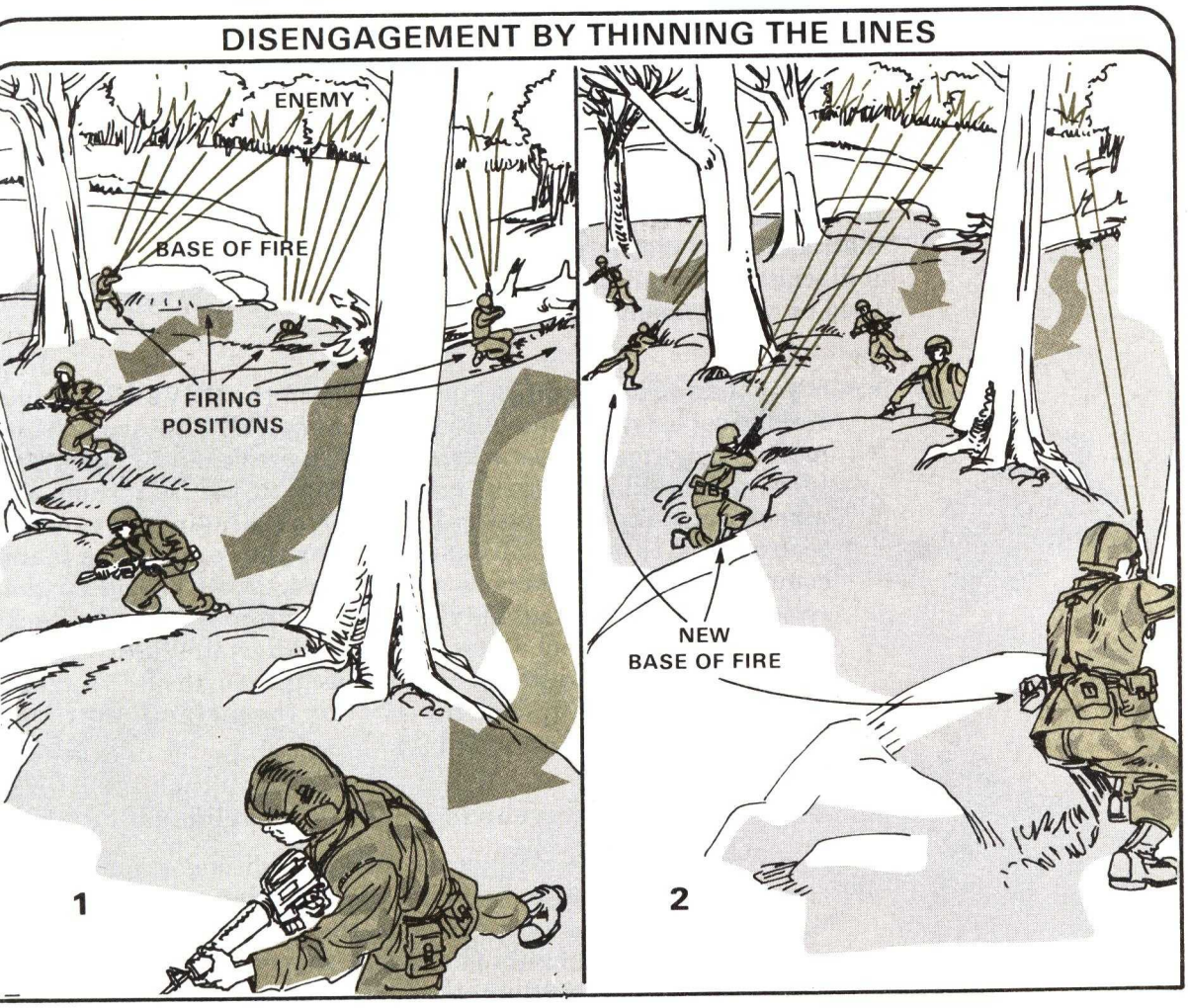
c. **Disengagement by thinning the lines.**

(1) When disengaging by thinning the lines, selected men from each rifle team (often one man from each fighting position) disengage and move to the rear. The men still in position become the base of fire to cover the movement.

(2) When the rearward-moving men are in position to provide a base of fire, the rest of the element moves to their rear.

(3) The Dragon has a 65-meter minimum arming range, so it is usually wise to move the Dragons first. The platoon and squad leaders normally move last. As one group disengages, men remaining in position increase their rate of fire to keep the enemy from overrunning the position. As with other methods of disengagement, this process is continued until contact is broken.

(4) Disengagement by thinning the lines allows an even distribution of fire across the dismount element's sector during the disengagement. It is used when no one rifle team can cover the dismount element's sector because of close terrain or limited visibility. Because teams are separated, control is more difficult than when disengaging by teams.



d. **Disengagement of rifle teams when employed with the BFVs.** When the BFVs and the rifle teams are employed on the same position, the rifle teams normally move to the rear while the BFVs provide a base of fire. The BFVs then quickly move to the rear, link up with the infantry, load them and move out. The rifle teams can use any of the disengaging techniques discussed earlier. The method selected usually will be dictated by the enemy situation, the terrain, the fighting vehicle crews' ability to serve as a base of fire, and the type and amount of overwatching fires.

6-26. How the fighting vehicle element disengages.

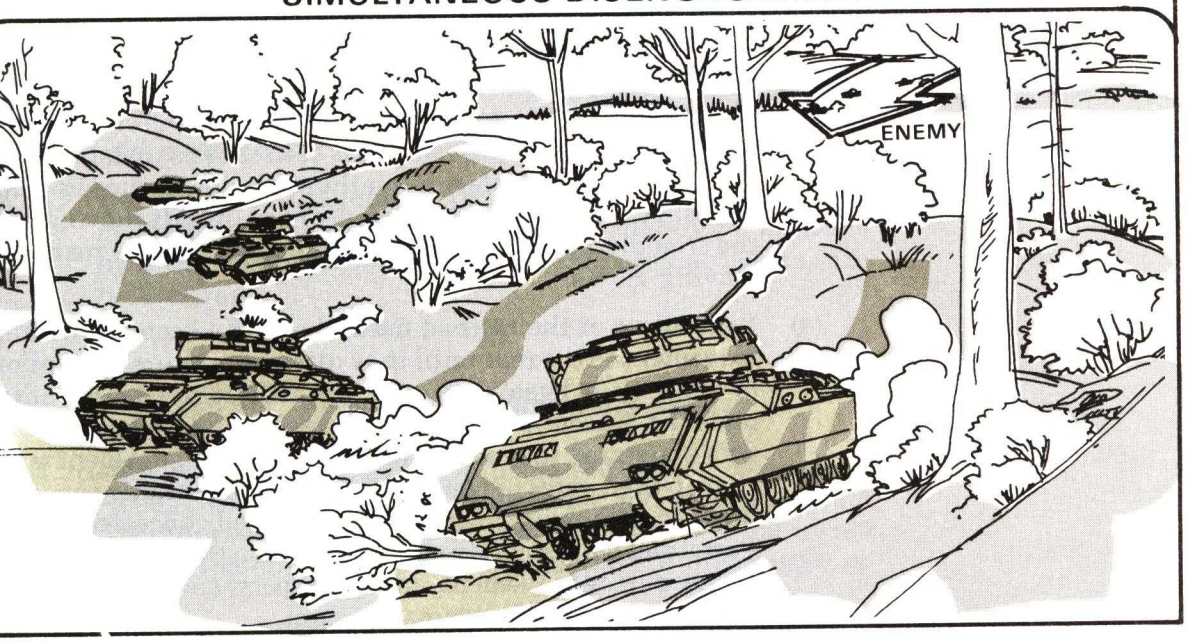
Because of the BFV's speed, firepower, and protection against small arms fire and artillery shell fragments, it is usually best for the dismount element (when deployed) to disengage first while covered by the BFVs. But, if the BFVs are not in a position to support the dismount element by fire or, if the dismount element is heavily engaged, the fighting vehicle element may have to disengage first and move to a position to assist the dismount element in disengagement. Whichever method is used, there are two basic ways the vehicle element can disengage. If the BFVs are covered by another force, simultaneous disengagement may be used. If the BFV must cover its own movement, it disengages by pairs. These methods are similar in concept to those used by the dismount element.

a. **Simultaneous disengagement.** When the BFVs disengage simultaneously, they move as one unit as quickly as possible. This method is normally used when the BFVs are covered by another force and speed is the most critical factor. If the rifle teams are already mounted, the entire platoon moves, using movement techniques, to a position designated by the company or team commander. If the rifle teams are deployed, the BFVs move to the remount point to pick up the rifle teams, or it may have to attack the enemy by fire from a new position to allow the rifle teams to disengage. Once the rifle teams have disengaged, the BFVs again disengage either simultaneously or by the method described below, as the situation warrants.

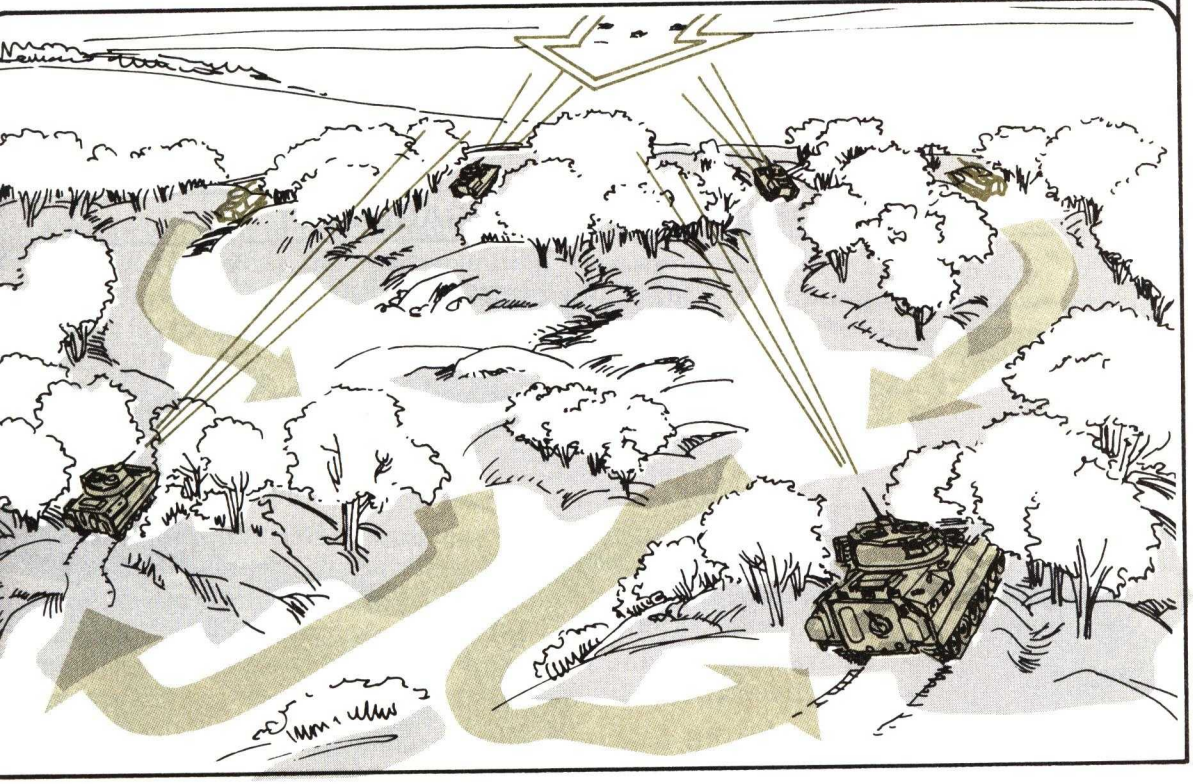
b. **Disengagement by vehicle or pairs of vehicles.**

(1) When the BFVs must cover their own disengagement, one, two, or three vehicles can be left in position as a base of fire while the remainder moves to the rear. The BFVs left in position must cover the entire sector until the moving vehicles reach positions they can use to provide a base of fire.

SIMULTANEOUS DISENGAGEMENT



DISENGAGEMENT BY PAIRS

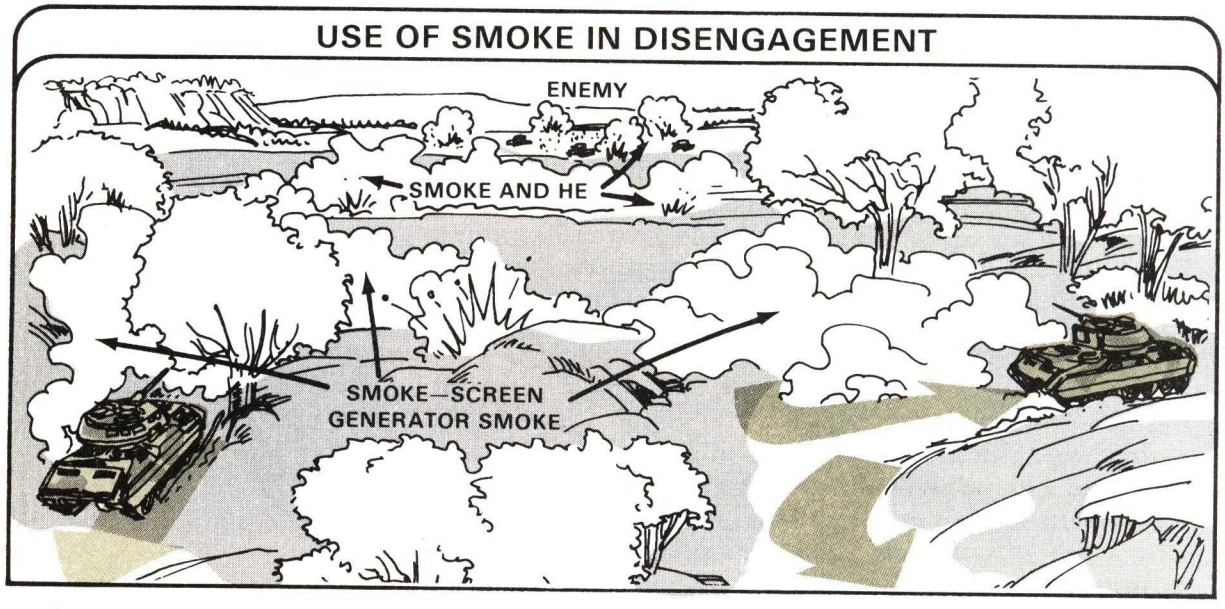


(2) The number of vehicles left as the base of fire depends on the enemy situation and how quickly the fighting vehicle element must disengage, but normally one pair of vehicles form a base-of-fire element while the other pair moves back.

(3) The BFVs receiving the heaviest tank and ATGM fire are normally disengaged first. It is critical that other BFVs, ITVs, or tanks are able to cover the sectors of the disengaging BFVs. This will prevent the enemy from quickly moving into the friendly positions through the gap left by the rearward moving BFVs.

(4) Regardless of the method used, the BFVs keep up fire and movement to the rear until they disengage or are in position to serve as a base of fire for the rifle teams or for other platoons. Execution must be aggressive and well controlled. BFVs covering the rest of the element's disengagement must step up their rates of fire while dismounted infantry move to the rear, taking advantage of covered and concealed routes. Turret weapons should remain oriented in the direction of the enemy during movement, and firing ports should be manned as soon as the rifle teams remount.

(5) To cover the platoon's move, the platoon leader should request, through his FO or the company team commander, indirect fire and smoke. HE is used against enemy troops and smoke is used to screen exposed routes the platoon must cross. The BFVs smoke-screen generator also can be used to conceal the platoon's movement. If the vehicles are having difficulty breaking contact, smoke-grenade launchers should be used.



(6) If direct fire support is needed to let the platoon disengage, the platoon leader should ask the company or company team commander for assistance. If the covering fire of other elements is not enough to allow it to move, the platoon may have to use a combination of mounted and dismounted fire and movement.

(7) During a disengagement, the company team commander may direct a platoon to cover the movement of other platoons by occupying battle positions to fire into assigned areas or to hold terrain.

Section VI. Other Platoon Defensive Missions

n addition to the defensive operation discussed earlier, companies, ompany teams, battalions, and battalion task forces also conduct elays and withdrawals. Platoons do not conduct delays or withdrawals ngly but participate in these operations as part of a company or ompany team.

latoons and squads use the same fundamental tasks in a delay or a ithdrawal that they use in other defensive operations, but these are odified to fit into the company or company team concept of perations.

-27. Delay.

. A delay is fought to slow the enemy's advance and to trade space for time. If possible, the delay operation stops the enemy. Should the enemy strength or the risk to friendly forces be too great, the enemy is engaged and forced to deploy. Just as the enemy appears ready to mount his assault, the delaying force disengages and withdraws to a new position. The enemy then must remount, move forward and prepare for another assault. A delaying force may attack, ambush, raid, or use any other tactic necessary to accomplish the mission.

. The platoon takes part in a company, company team, or battalion task force delay by performing those tasks given to it by the company or company team commander. Most of these tasks are standard defense missions — emplacing obstacles, defending a position, firing into assigned sectors or engagement areas, providing security, and preparing in-depth battle positions.

. The remount is a critical part of the delay and BFVs must be positioned not only to take advantage of long-range fields of fire,

but also to support the rapid redeployment of the platoon to its next position.

6-28. Withdrawal.

a. A withdrawal is an operation in which a force frees itself for a new mission. It may be conducted with or without enemy pressure. When ordered to withdraw, the company or company team disengages (if in contact) and moves to the specified area. It may do this alone, or as a part of a battalion or battalion task force.

b. The method the company or company team commander uses to withdraw depends on enemy pressure. If the enemy is attacking or is expected to attack during the withdrawal, a **withdrawal under pressure** is conducted. If the enemy is not attacking and the commander thinks that by stealth he can withdraw before the enemy can react, he can conduct a **withdrawal not under pressure.**

c. When withdrawing under pressure, the company or company team normally covers its own disengagement and withdrawal. As described earlier, platoons disengage using fire and movement, massing fires to move away from the enemy.

d. When withdrawing **not** under pressure, the unit may withdraw covered by a detachment left in contact (DLIC). The DLIC protects the main body by deception and by resistance when necessary. The make up of the DLIC is directed by the company or company team commander. It may consist of a squad from each platoon, or one platoon from the company or company team, or another combination of forward elements. The squad or platoon, as part of a DLIC, may shift to cover the sector of the withdrawing forces. Positions should be shifted only when necessary as too much movement may alert the enemy. If they are spread too widely, command and control becomes difficult.

e. When a platoon serves as the DLIC for a withdrawing company or company team, the company team executive officer (2IC) or the platoon leader is the DLIC commander. If a squad remains in the platoon's position while the remainder of the platoon withdraws, that squad is a part of the DLIC. It is controlled by the company executive officer or one of the platoon leaders.

f. The DLIC attempts to deceive the enemy by feigning the company or company team's function. The DLIC must be prepared to detect and repel enemy attacks until the main body has withdrawn safely. This may require that part of the withdrawing force's ammunition and missiles be left with the DLIC.

g. It is best to conduct a withdrawal not under pressure during reduced visibility. The main body rifle teams and fighting vehicle crews should have preselected remount areas to the rear of their positions. Squad leaders should reconnoiter routes to remount areas so that actual withdrawals can be done quickly, with minimum confusion. Once the rifle teams have mounted their BFVs, the platoon(s) should move quickly along a designated route to their next position.

h. When the DLIC commander directs the DLIC to withdraw, it must quickly disengage, since the force is relatively exposed, and move along its assigned routes to assemble and move out to its next mission.

6-29. Defense on urban terrain.

a. While defending on urban terrain, tanks and BFVs will dominate streets and other high speed avenues of approach. This forces the enemy to dismount and use the buildings on either side. Dismounted infantry are used in buildings to cover the streets as well as the building, floor and room entrances. Care must be taken when positioning tanks and BFVs inside buildings because flooring may not support their weight.

b. Bradley commanders must take care to preclude damage to the 25-mm gun and TOW launcher when working around and inside buildings.

c. In an urban area, the enemy is greatly restricted in his movement and observation. Defensive positions must be carefully selected to provide mutual support between all elements. Leaders must realize that an urban defense can be quickly defeated by allowing the enemy to infiltrate through routes not covered by observation and fire, such as through sewers, or over the tops of buildings.

d. As in the attack, most of the fighting is difficult when the elements are separated. The commander may tell the platoon leader which element to locate with.

e. Typical missions of a platoon defending in an urban area are:

(1) Providing direct fire support to destroy or suppress enemy positions.

(2) Destroying enemy armored vehicles and direct fire artillery pieces.

(3) Providing rapid, protected transport to dismounted infantry as required.

(4) Reinforcing selected areas with fire and by transporting dismounted infantry.

(5) Covering obstacles by fire.

(6) Providing smoke screens to cover friendly movement.

(7) Providing resupply of critical items.

(8) Evacuating casualties as the mission permits.

f. In the defense, the BFV should be integrated into the platoon fire plan. The 25-mm gun and 7.62-mm coax fields of fire should cover streets and open areas. Because of the close engagement ranges, the TOW launcher will not often be used. Dragons and LAWs in the hands of the dismounted infantry and the main gun of tanks will be the primary destroyers of enemy tanks.

g. Dismounted antitank weapons cannot be fired from unvented or completely enclosed rooms.

CHAPTER 7

Patrolling

A patrol is a mission given to units, normally of squad, platoon or company size. The unit organizes for a patrol, maintaining unit integrity as much as possible. For example, when a squad is ordered to conduct a patrol, the squad leader normally leads the patrol.

Units equipped with the BFV are capable of conducting all types of dismounted and mounted patrols. Mounted combat patrols are common missions for BFV infantry platoons. Mounted reconnaissance patrols are normally scout platoon missions. Infantry platoon leaders must be prepared to conduct mounted reconnaissance patrols if the scout platoon is not available.

Section I. Organization and Categories of Patrols

There are two categories of patrols. Both can be conducted mounted or dismounted.

- *Reconnaissance (area or zone) patrols* collect information or confirm or disprove the accuracy of information previously gained.
- *Combat (ambush, security, or raid) patrols* provide security and harass, destroy, or capture enemy troops, equipment, and installations. A combat patrol also collects and reports information as part of its mission.

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7-1. Organization.

A unit preparing to conduct a patrol must organize to perform the specific functions of that type of patrol.

a. **Headquarters.** The patrol headquarters consists of the leader, assistant leader, radiotelephone operators (RATELO), forward observer, and any other troops required to control and support the patrol. In a small patrol (three to four men), the leader may be the only man in the headquarters.

b. **Elements.** Elements are the subordinate organizations in the patrol unit tailored to the patrol's mission. The leader of a patrol must decide what elements and teams are needed, select men for those elements and teams, and decide what weapons and equipment to provide. He should use his unit's normal organization and chain of command (squad leaders and platoon sergeant) to conduct the patrol. For example, a platoon conducting a combat patrol requiring a headquarters, an element to perform the assault, an element to provide security, and an element to provide fire support may be organized like this:

   (1) The platoon leader, his RATELO, the platoon sergeant, the FO, and perhaps a medic compose the headquarters.

   (2) The 1st and 2d squads make up the assault element.

   (3) The 3d squad is the security element.

   (4) The Dragon gunners, along with the machine gun teams, act as the support element.

Elements of a patrol may be further designated as teams to accomplish essential tasks.

7-2. Categories.

As mentioned above, there are two categories of patrols, reconnaissance and combat. The organization of each category depends on its mission.

a. **Reconnaissance patrol.**

   (1) In an area reconnaissance, the patrol is organized into a headquarters, a reconnaissance element, and a security element.

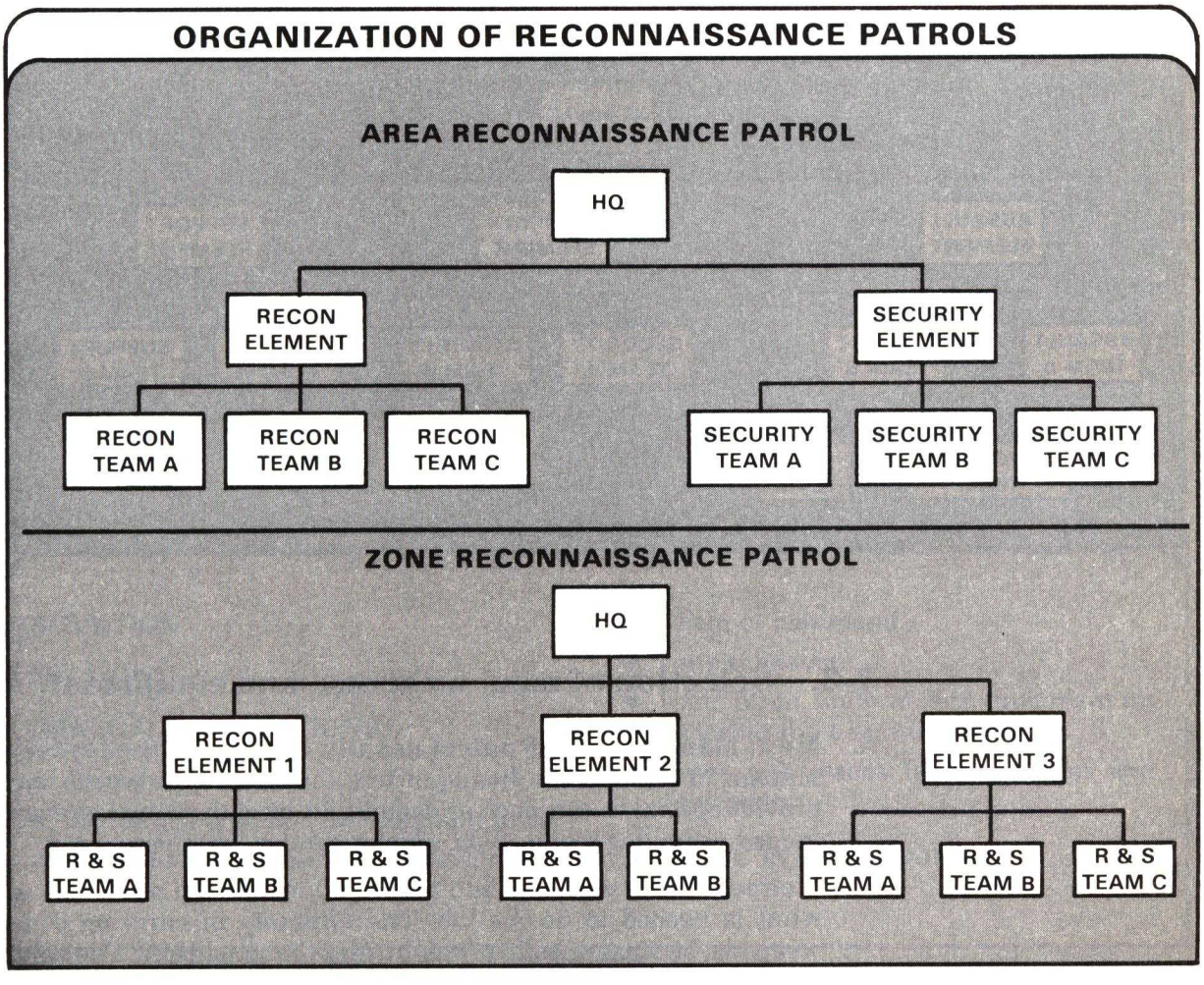
   (2) In a zone reconnaissance, the patrol is organized into a headquarters and several reconnaissance elements.

   (3) Reconnaissance patrol elements may be further organized into teams as necessary to accomplish the elements' tasks.

Reconnaissance elements may be organized into several reconnaissance teams for an area reconnaissance or organized into reconnaissance and security teams for a zone reconnaissance. Security teams are organized as required to secure the objective area.

NOTE

A two-, three-, or four man reconnaissance patrol is not organized into elements. Instead, it operates as a single unit providing its own security.

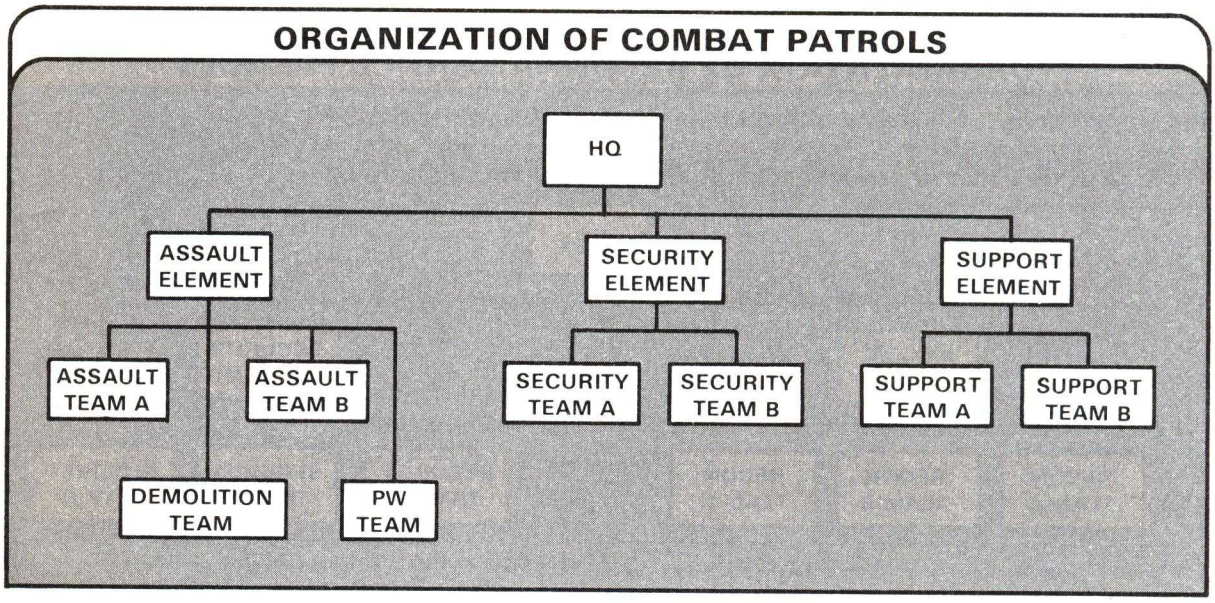


b. **Combat patrol.**

(1) A combat patrol is normally organized into a headquarters, an assault element, a security element, and a support element. At times, the support element may be omitted and automatic weapons added to the assault element.

(2) Combat patrol elements may be further organized into teams as necessary to accomplish the elements' tasks. Special purpose teams may also be organized, such as scout dog, demolition, litter, search, and prisoner teams.

(3) A team that may be designated for either type of patrol will consist of a compass man to continually check direction, a point man to follow the directions of the compass man and provide security, and a pace man to keep a running count of his 100-meter pace to verify the distance covered.



7-3. Selection of men, weapons, and equipment.

a. **Men.** Members of the patrol usually come from the leader's platoon or squad. The headquarters dispatching a patrol may provide special troops, such as demolition specialists, interpreters, guides, scout dog teams, FOs, aidmen, and messengers.

b. **Weapons.** The weapons and ammunition selected are based on what is needed to do the job. The difficulty of carrying some weapons, because of bulk or weight, must be considered. The value

of the weapon to the accomplishment of the mission is measured against the difficulty in carrying it.

c. **Equipment.** In addition to equipment commonly used by every patrol, the leader selects equipment to aid in control and for use en route and in the objective area.

(1) **Aiding in control.** This may include whistles, flares, radios, flashlights, and luminous tape.

(2) **Use enroute.** Equipment to help reach and return from the objective may include maps, binoculars, flashlights, boats, stream-crossing equipment, compasses, and wire cutters.

(3) **Use in the objective area.** This may include explosives, binoculars, ropes to bind prisoners, and flashlights.

(4) **Common use.** This is equipment normally carried on all patrols, or that which is common to all members of the patrol. It may include the uniform to wear and individual equipment to carry. An SOP should prescribe routine uniform and equipment to save time in planning and preparing for a patrol. The patrol leader must determine how much water and food is required. Rations are carried only when needed.

Section II. Preparation for a Patrol

When given an order to lead a patrol, the leader starts his troop-leading procedure as described in Chapter 3. He issues a warning order to all members of the patrol.

WARNING ORDER FORMAT

SITUATION

MISSION

GENERAL INSTRUCTIONS:

- Organization.
- Uniform and equipment common to all.
- Weapons, ammunition, and equipment.
- Chain of command.
- Time schedule.
- Time, place, uniform, and equipment for receiving the operation order.
- Times and places for inspections and rehearsals.

SPECIFIC INSTRUCTIONS

7-4. Coordination.

a. Coordination is continuous throughout patrol planning and preparation. Even though some coordination is done for him, the leader of the patrol checks to be sure that nothing is overlooked.

b. Before leaving the place where he gets the OPORD, the leader coordinates what he can. The place will probably be a battalion or company command post (CP) where communications are good and key personnel are available to help in the coordination.

c. The leader should carry a checklist during his coordinating effort so as not to overlook anything vital to his mission. Some items may need to be coordinated with more than one staff section.

d. The leader must make a map, ground, or aerial reconnaissance before completing his plan.

e. The leader coordinates the following with the staff member or element designated.

(1) Intelligence officer (S2):

(a) Changes in the enemy situation.

(b) Special equipment requirements.

(2) Operations and training officer (S3):

(c) Changes in the friendly situation.

(d) Route selection, loading zone selection.

(e) Resupply (in conjunction with supply officer (S4)).

(f) Signal Plan — call signs, frequencies, code words, pyro-technics, and challenges and passwords.

(g) Departure and reentry of friendly lines (see below).

(h) Other units in the area.

(i) Attachment of specialized troops (demolition team, scout dog team, FOs, interpreters).

(j) Rehearsal areas with terrain similar to objective site. Also, security of the area; use of blanks, pyrotechnics, and live ammunition; fortifications available; time the area is available; and transportation.

(3) Platoon FO or company FIST chief:

(a) Fire support on the objective.

(b) Fire support along routes to and from the objective (include alternate routes).

(4) Friendly forward unit:

(a) The leader gives identification (himself and his unit), size of patrol, time(s) of departure and return, and area of the patrol's operation (if it is within the forward unit's area of operation).

(b) The forward unit gives information on terrain, known or suspected enemy positions, likely enemy ambush sites, and latest enemy activity. It also furnishes detailed information on friendly positions; obstacle locations; fire plan; and support the unit can furnish, such as fire support, litter teams, guides, communications, and reaction units. The signal plan, to include the signals to be used upon reentry, and the procedure to be used by the patrol and the guide during departure and reentry are also provided by the forward unit. Also, location(s) of dismount point (if used), initial rally point, departure point, and reentry point is furnished.

(5) Adjacent patrol(s):

(a) Identification of the patrol.

(b) Mission.

(c) Route.

(d) Fire plan.

(e) Signal plan.

(f) Planned times and points for departure and reentry.

(g) Any information that either patrol may have about the enemy.

7-5. Complete the plan.

After the warning order has been issued, reconnaissance has been made, and members of the patrol are preparing themselves and their equipment, the leader completes his plan. He first assigns essential tasks to be performed by elements, teams, and men. After this, he plans other phases of the unit's mission.

a. **Tasks in the objective area.** Essential tasks in the objective area are assigned. The leader plans how elements, teams, and men are to perform their tasks.

b. **Other tasks.** Tasks are assigned and planned which will help the patrol reach the objective and return. These tasks can include

navigation, security during movement and halts, actions at danger areas, actions on enemy contact, and water crossing.

c. **Times of departure and return.** Times of departure and return are based on the amount of time needed to reach the objective, accomplish essential tasks in the objective area, and return to a friendly area.

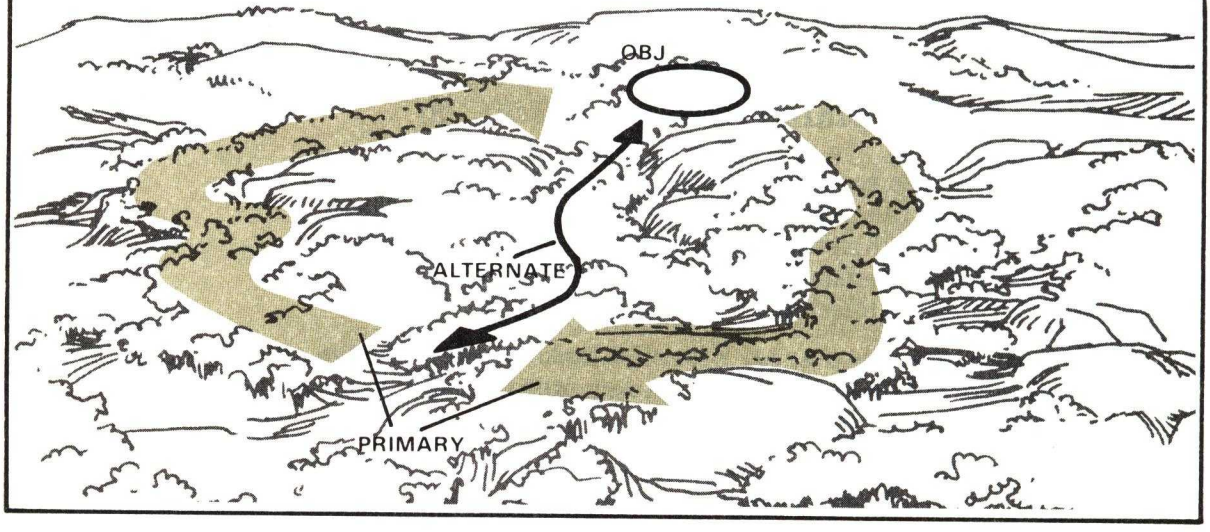
(1) **Reach the objective.** This is determined by considering the distance, terrain, anticipated speed of movement, friendly and enemy situation, and (if applicable) the time the mission must be accomplished.

(2) **Accomplish essential tasks in the objective area.** This includes the leaders' reconnaissance and movement of elements and teams into position, as well as the accomplishment of the unit's mission.

(3) **Return to a friendly area.** This may be difficult to determine because casualties, prisoners, or captured equipment may slow the patrol. The use of a different return route may change the time needed.

d. **Primary and alternate routes.** The leader selects the primary route to and from the objective. The return route should be different from the route to the objective. He also selects an alternate route which may be used either to or from the objective. The alternate route is used when the patrol has made contact with the enemy on the primary route. It may also be used when the leader knows or suspects that the patrol has been detected.

PRIMARY AND ALTERNATE ROUTES



e. **Rally points.** A rally point is a place where a patrol can reassemble and reorganize if dispersed during movement; or a place to temporarily halt to reorganize and prepare for actions at an objective, to prepare to depart from friendly lines, or to prepare to reenter friendly lines. The leader should pick rally points either during the patrol or by a map study before the patrol. Those picked from a map are tentative and will be so until confirmed on the ground.

(1) For a good rally point, the leader should look for places that:

(a) Are large enough for the patrol to assemble.

(b) Are easily recognized.

(c) Have cover and concealment.

(d) Are defensible for a short time.

(e) Are away from normal routes of troop movement.

(2) The leader must select an initial rally point (on the friendly side of a forward unit's lines) where a patrol rallies if dispersed before departing friendly lines or before reaching an en route rally point. He must also select rally points on both the near and far side of danger areas.

(3) The leader also selects en route rally points where a patrol rallies if dispersed en route to or from its objective. There may be several. They are between friendly lines and an objective along a patrol's route.

(4) Also, the leader selects an objective rally point where a patrol halts to prepare for actions at its objective. It is also a point to which a patrol returns after its actions at its objective. It must be near a patrol's objective, but there is no set distance to it from the objective. It should be far enough from the objective so that the patrol's activities will not be detected by the enemy.

(5) Finally, the leader must select a reentry rally point on the enemy side of a forward unit's lines. A patrol halts at a reentry rally point to prepare to reenter friendly lines. It is short of friendly lines and out of sight and sound of friendly observation posts.

f. **Rehearsals and inspections.** These must be well planned and conducted even though the men are experienced in patrolling. Coordination is made with the commander or S3 for use of a rehearsal area resembling the objective area. Plans must provide for inspections by element and team leaders as well as by the leader of the patrol.

g. **Signals.** The signals to be used on the patrol must be planned and rehearsed. Signals may be needed to lift or shift supporting fire, to start an assault, to order withdrawal from the objective, to signal "all clear," and to stop and start movement of the patrol. Visual and audible signals such as arm-and-hand signals, flares, voice, whistles, radios, and infrared equipment may be used. All signals must be known by all patrol members.

h. **Communications with higher headquarters.** The plan must include radio call signs, primary and alternative frequencies, times to report, and codes.

i. **Challenge and password.** The challenge and password from the communications-electronics operation instructions (CEOI) should not be used beyond the forward edge of the battle area (FEBA). The leader may devise his own challenge and password system to be used beyond the FEBA. An example of this is the odd-number system. Any odd number can be used. If the leader specified 11 as the odd number, the challenge could be any number between 1 and 10. The password would be the number which, when added to the challenge, equals 11 (challenge 8, password 3).

j. **Chain of command.** Changes to the chain of command given in the warning order are included in the order.

k. **Location of leaders.** The location of the leaders of the patrol is planned for all phases of the patrol — during movement, at danger areas, and at the objective.

(1) The leader plans to be where he can best control the patrol during each phase.

(2) The assistant leader may be given a special job for each phase of the patrol. He may help the leader control the patrol by being where he can best take command, if required.

(3) Some places the assistant leader may be during actions in the objective area are:

(a) On a raid or ambush, with the support element.

(b) On an area reconnaissance, in the objective rally point (ORP).

(c) On a zone reconnaissance, with a reconnaissance element which has been directed to move to and establish the point at which all elements are to link up after reconnoitering.

7-6. Issue operation order.

a. The operation order is issued in a standard sequence. Terrain models, sketches, or blackboards are used to illustrate the plan. Sketches to show planned actions can be drawn in sand, dirt, or snow.

b. Personnel may make notes but should hold questions until the order is completed. This prevents interruption of the leader's train of thought.

OPERATION ORDER FORMAT (WITH CONTROL SITUATIONS)

1. SITUATION.
   a. Enemy forces.
      (1) Identification.
      (2) Location.
      (3) Activity.
   b. Friendly forces.
      (1) Mission of next higher unit
      (2) Location and planned actions of units on right and left.
      (3) Mission and routes of other (adjacent) patrols.
      (4) Fire support available.
   c. Attachments and detachments.
2. MISSION.
3. EXECUTION.
   a. Concept of operation (scheme of maneuver and fire support plan).
   b. Subunit tasks (elements/teams/men).
   c. Coordinating instructions.
      (1) Time of departure and return.
      (2) Movement techniques and order of movement.
      (3) Route (primary and alternate).
      (4) Departure and reentry of lines.
      (5) Rally points and action at rally points.
      (6) Action at danger areas.
      (7) Action on enemy contact.
      (8) Action at the objective.
      (9) Fire support (if not already covered).
      (10) Intelligence requirements.
      (11) Other tasks (stream crossings, boat operations, etc.).
4. SERVICE SUPPORT.
   a. Rations and water.
   b. Arms and ammunition.
   c. Uniform and equipment.
   d. Method of handling wounded, PWs, and captured equipment.
   e. Transportation.
5. COMMAND AND SIGNAL.
   a. Command.
      (1) Chain of command.
      (2) Location of patrol leader during movement and at the objective.
   b. Signal.
      (1) Arm-and-hand and other signals, codes, and radio call signs and frequencies to use within the patrol.
      (2) Report, codes, and radio frequency(s) and call signs to use with higher headquarters.
      (3) Challenge and password.

7-7. Inspect and rehearse.

a. **Inspections.** Inspections determine the patrol's physical and mental state of readiness. Inspections before rehearsals ensure completeness and correctness of uniform and equipment. Men are questioned to see if each one knows:

(1) The plan.

(2) What he is to do and when he is to do it.

(3) What others are to do.

(4) Challenges and passwords, signals, codes, radio call signs, frequencies, and reporting times.

b. **Rehearsals.** Rehearsals help ensure the proficiency of the patrol. They let the leader check plans and make any changes needed. The suitability of equipment is verified. It is through well-directed rehearsals that men become familiar with what they must do when on patrol.

(1) If the patrol is to be at night, it is advisable to hold both day and night rehearsals. Terrain similar to that over which the patrol will operate should be used. When time permits, all actions are rehearsed. When time is short, only the most critical actions are rehearsed. Actions to take place in the objective area are critical and should always be rehearsed.

(2) A good way to rehearse is to have the leader walk and talk the whole patrol through each action. He describes the actions of elements, teams, and men, and he has them perform these actions. In this dry run, men take their positions in formations at reduced distances to get the "feel" of the patrol. When the different actions are clear to all concerned, a complete (normal speed) rehearsal is held with the whole patrol. This is a wet run. As many dry runs and wet runs are conducted as deemed necessary to gain proficiency. When possible, element and team leaders rehearse their units separately, before the final rehearsal of the entire patrol.

Section III. Common Patrolling Tasks

Soldiers who patrol must know a variety of tasks. Although not every patrol requires the same tasks, those discussed here are common to most patrols.

7-8. Departure from friendly lines.

a. The departure of a patrol through another unit's lines can be confusing and dangerous if not well coordinated. The leader must coordinate the departure with the forward unit commander.

b. When the patrol is ready to conduct the passage, it moves up and halts at the initial rally point.

c. Before passing through the forward unit, the leader again checks with that unit's commander to learn of recent enemy activity or situation changes that may require adjustment in the patrol plan.

d. A guide from the forward unit then leads the patrol through his unit and through the wire and other obstacles forward of the unit.

e. The forward unit may have OPs to its front that can help secure the patrol as it moves out. The patrol moves beyond the range of the friendly unit's small arms and final protective fire, and halts briefly to adjust to sights and sounds of the battlefield.

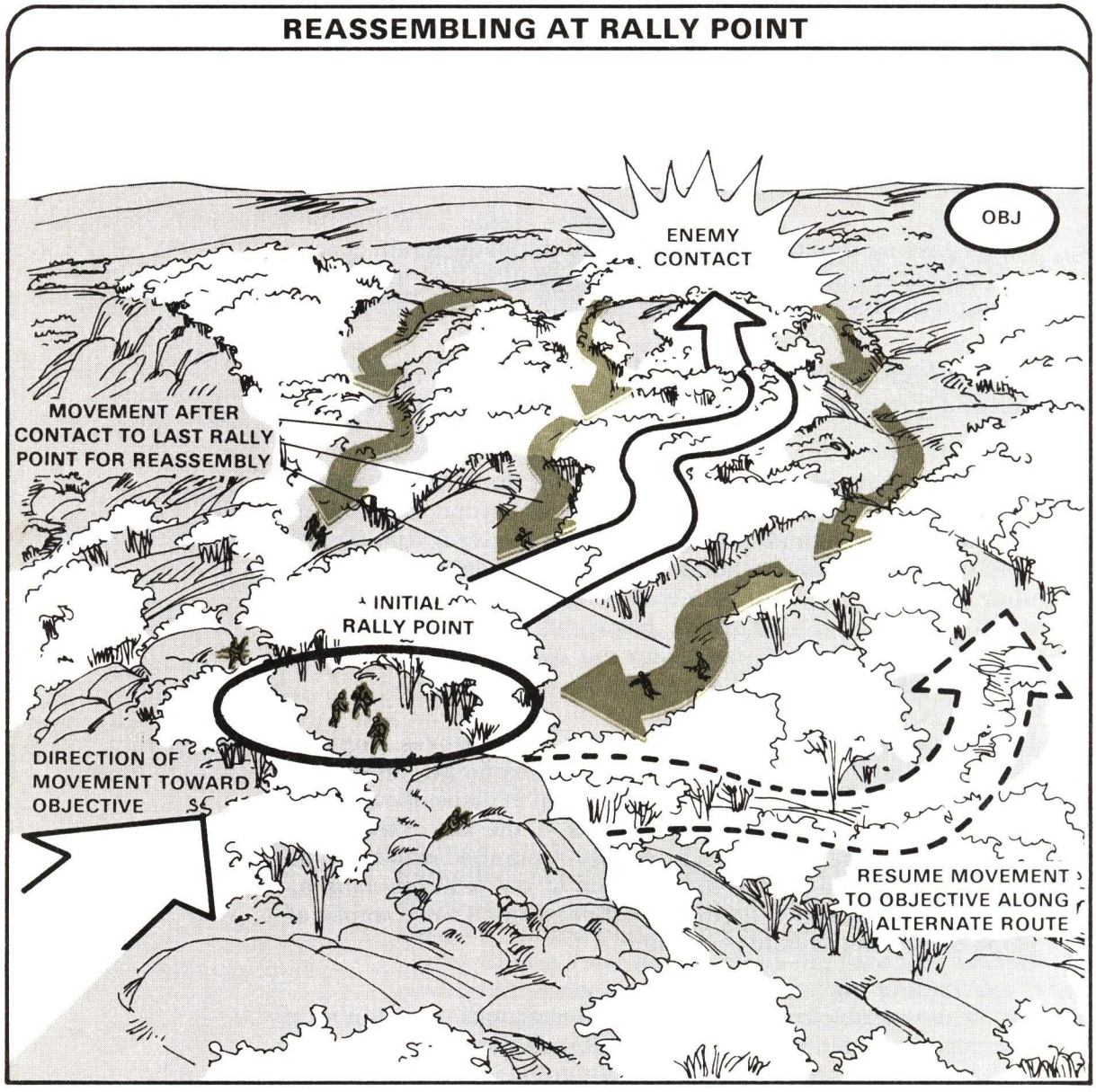
7-9. Use of rally points.

a. **Rally points along the route.** As the patrol moves along its route, the leader will select and announce rally points, or confirm points that were earlier selected from a map. If dispersed between rally points en route, the patrol rallies at the last rally point. Actions to be taken at rally points must be planned in detail. The plan must provide for the continuation of the patrol as long as there is a good chance to accomplish the mission. Two examples of plans for actions at rally points are:

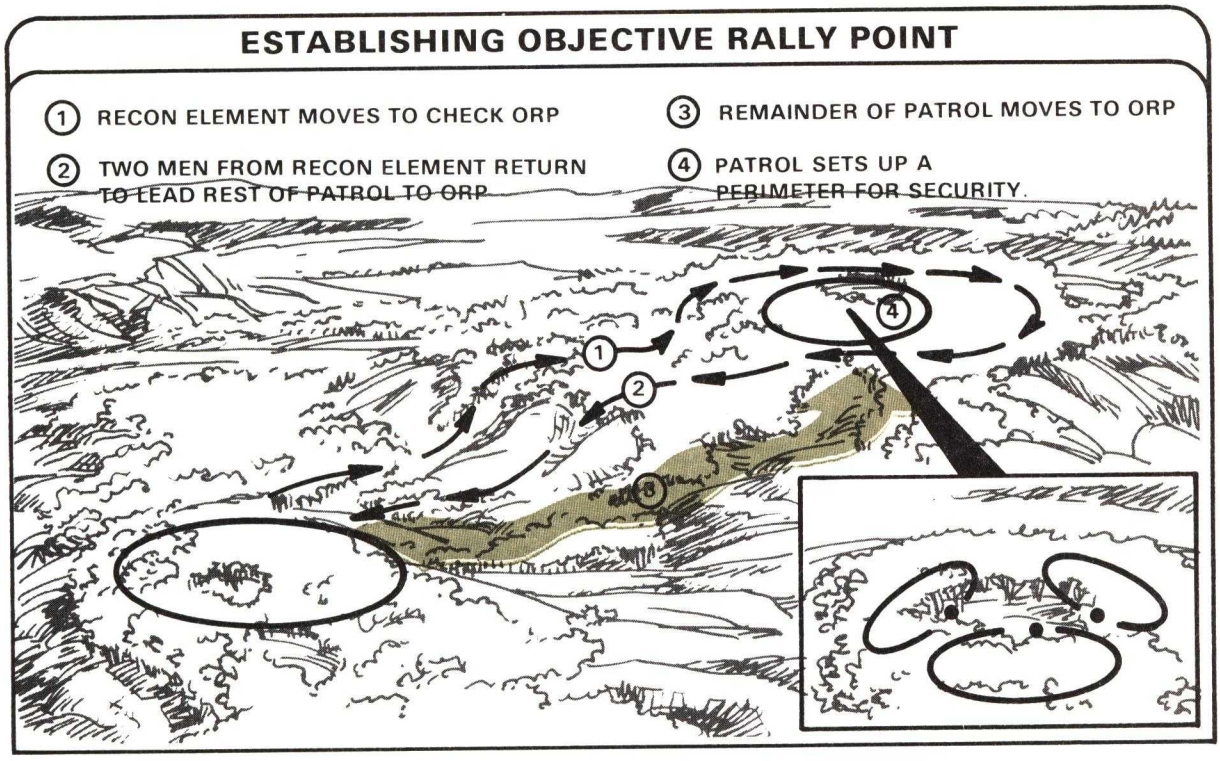
(1) The assembled patrol members will wait until a set number of men arrive and then go on with the mission under control of the senior man present. This plan is good for a reconnaissance patrol when two or three men may be able to accomplish the mission.

(2) The assembled patrol members will wait for a set period, after which the senior man present will decide whether to continue the patrol or not, based on troops and equipment present. This may be the plan when a specific number of men, or

certain items of equipment, or both, are needed to accomplish the mission.


REASSEMBLING AT RALLY POINT
OBJ
ENEMY CONTACT
MOVEMENT AFTER CONTACT TO LAST RALLY POINT FOR REASSEMBLY
INITIAL RALLY POINT
DIRECTION OF MOVEMENT TOWARD OBJECTIVE
RESUME MOVEMENT TO OBJECTIVE ALONG ALTERNATE ROUTE

b. **Objective rally point.** The patrol halts as it nears the tentative ORP, and a reconnaissance element moves forward to see if the point is suitable as an ORP and to see that no enemy troops are near. When the patrol leader is satisfied, two men are sent back to bring the rest of the patrol into the ORP. The patrol then sets up a perimeter for all-round security.


ESTABLISHING OBJECTIVE RALLY POINT
1 RECON ELEMENT MOVES TO CHECK ORP
2 TWO MEN FROM RECON ELEMENT RETURN TO LEAD REST OF PATROL TO ORP
3 REMAINDER OF PATROL MOVES TO ORP
4 PATROL SETS UP A PERIMETER FOR SECURITY.

(1) When the ORP is occupied and secure, the leader of the patrol, compass man, and element leaders go on a leaders' reconnaissance. Before the leader of the patrol goes, he tells the assistant leader:

(a) Who he is taking with him.

(b) How long he will be gone.

(c) What to do if he fails to return.

(d) What to do if he makes enemy contact.

(e) What to do if the assistant leader (in the ORP) makes enemy contact.

(2) This leaders' reconnaissance is done to pinpoint the objective, to pick positions for the patrol's elements, and to get information to confirm or alter the plan. After the leaders' reconnaissance, the leaders return to the ORP to complete plans and disseminate information. While they are doing this, one or more men may stay behind to observe the objective. On a reconnaissance patrol, if the leader gets enough information about the objective during the leaders' reconnaissance, his mission is accomplished and the patrol returns to friendly lines. If he does not get enough information,

the patrol reconnoiters as planned until enough information is gained to satisfy the requirement of the mission.

(3) If the patrol is to move out of the ORP as a group for its action at the objective, its leader may pick a release point where the patrol will separate. Each element then goes on its own route from the release point to its position. When the mission is accomplished, the patrol assembles in the ORP and the members disseminate their information.

7-10. Danger area.

a. Specific plans are made in advance for crossing each known danger area (an area where there is an increased chance of detection or a fight). General plans, which can be quickly modified to fit the situation, are made for crossing unexpected danger areas.

b. When moving, the patrol tries to avoid danger areas. Typical danger areas are:

(1) Known enemy positions.

(2) Roads and trails.

(3) Streams.

(4) Open area.

c. To cross a danger area, a patrol must:

(1) Designate near and far side rally points.

(2) Secure the near side.

(3) Secure the far side.

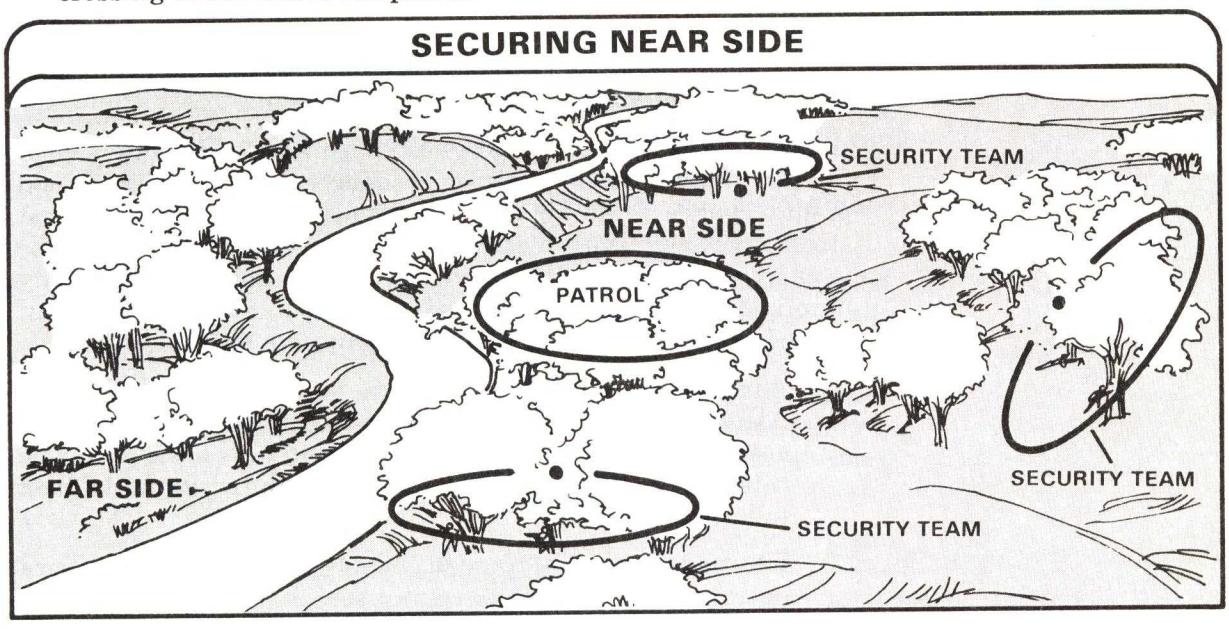
(4) Cross the danger area.

d. The patrol uses bounding overwatch or variations of it to cross a danger area. The leader decides how the patrol will cross based on the time he has, the size of the patrol, the size of the danger area, the fields of fire into the area, and the amount of security he can post.

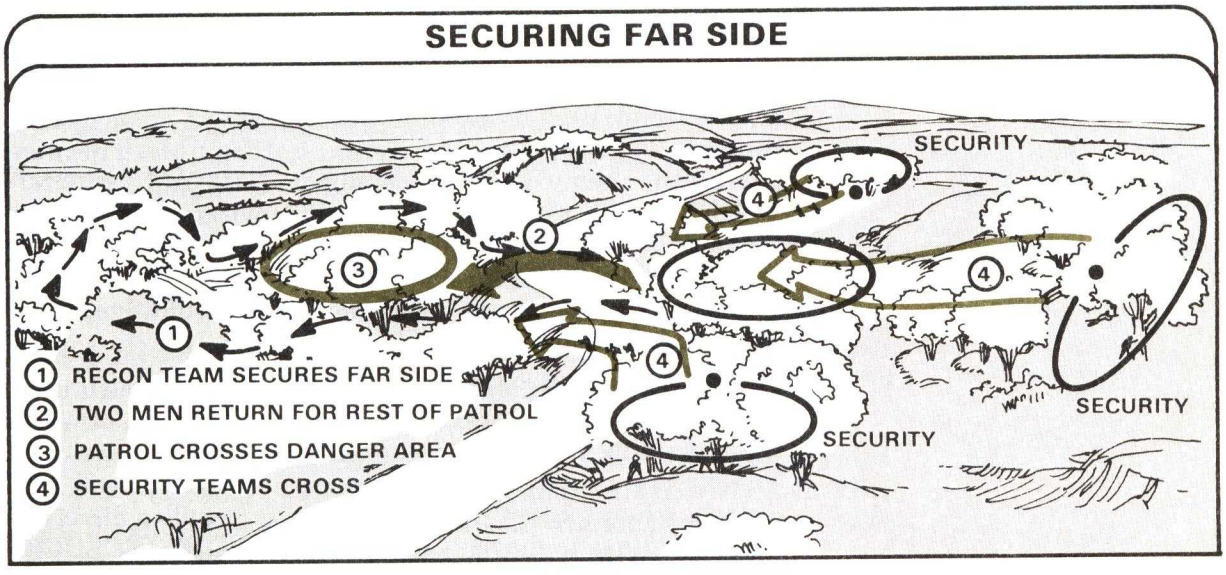
e. A small patrol may cross all at once, in pairs, or one man at a time. A large patrol normally crosses its elements one at a time. As each element crosses, it moves to an overwatch position or to the far side rally point where it waits until told to continue movement.

f. Securing the near side may involve nothing more than observing. In other places, security may involve posting security teams far enough out on both flanks and to the rear of the crossing point to

give warning of approaching enemy and to overwatch the crossing of the rest of the patrol.



g. Once flank and rear security is positioned, the danger area is crossed by a team. The team crosses quickly and reconnoiters and secures the far side of the danger area. The area secured on the far side must be large enough for full patrol deployment. When the team leader is sure the far side is safe, he sends two men back to signal the rest of the patrol to cross. When the patrol has crossed the danger area, the security teams cross and rejoin the patrol.



7-11. Actions on enemy contact.

Unless required by the mission, a patrol must strive to avoid enemy contact. If it does make unexpected contact with the enemy, it must quickly break the contact and continue its mission.

a. **Battle drills.** Battle drills are well-rehearsed actions intended to provide fast reaction to unexpected enemy contact. Leaders should prepare battle drills for common situations. These drills must stress simplicity (every man must understand the plan and be able to carry out his part of it) and speed of execution (as soon as any member of the patrol recognizes a situation requiring an immediate action, he initiates the appropriate drill).

(1) **Air attack.** The first man to see an aircraft shouts, AIRCRAFT, FRONT (RIGHT, LEFT, or REAR). If the leader sees that the aircraft is making a firing fun on the patrol, he hits the ground at once and shoots at the aircraft. All men follow his example.

(2) **Chance contact — "freeze."** This battle drill is used when a patrol, not yet seen by the enemy, sees the enemy and does not have time to take any other action. All men hold still until signaled to continue or to do something else.

(3) **Chance contact — "hasty ambush."** This battle drill is used when a patrol, not yet seen by the enemy, sees the enemy approaching and has time to take some action other than to "freeze." When signal is given to initiate the drill, all men move on line and take concealed firing positions. The leader lets the enemy pass if his patrol is not detected. If the patrol is detected, the ambush is initiated.

(4) **Chance contact — "immediate assault."** This battle drill is used when a patrol and an enemy element of the same size or smaller see each other at the same time and at such close range that fire and movement are not feasible. The men nearest the enemy open fire and shout, CONTACT, FRONT (RIGHT, LEFT, or REAR). The patrol moves swiftly into the assault. It stops the assault if the enemy withdraws and breaks contact. If the enemy stands and fights, the assault is carried through the enemy, and movement is continued until the enemy is destroyed or contact is broken.

(5) **Chance contact — "clock system."** This battle drill is used when a patrol and a larger enemy element see each other at the same time. The patrol must break contact or be destroyed. The direction in which the patrol is moving is always 12 o'clock. When contact is made, the leader shouts a direction and a distance to move — for example, EIGHT O'CLOCK,

TWO HUNDRED. This tells the patrol to move in the direction of 8 o'clock for 200 meters. Each man must be sure to move in the direction of the enemy or the direction he is facing at that moment. If contact is broken, the patrol rallies at the designated distance away and continues its mission. If contact is not broken, another direction and distance are given. This process continues until contact is broken.

(6) **Ambush.** If a patrol finds itself in an enemy ambush, it must get out of the kill zone or face destruction. It must take the following battle-drill action:

(a) The men in the kill zone, without order or signal, immediately return fire and quickly move out of the kill zone by the safest way. Smoke can help conceal the men in the kill zone.

(b) The men not in the kill zone fire to support the withdrawal of the men in the kill zone.

(c) The patrol breaks contact and reorganizes in the last designated rally point.

(7) **Indirect fire.** If a patrol comes under indirect fire, the leader immediately has the patrol move out of the impact area. The men do not seek cover. By continuing to move, the patrol is more difficult to hit, and the chance of being pinned down is less.

(8) **Sniper fire.** If a patrol comes under sniper fire, it immediately returns fire in the direction of the sniper. The patrol then conducts fire and movement to break contact with the sniper.

b. **Handling casualties and prisoners.** A patrol should have an SOP for handling casualties and prisoners. The method used must not jeopardize the mission.

(1) Wounded are moved from the immediate area of a firefight before receiving first aid. Giving first aid during a firefight risks even more casualties.

(2) Dead may be handled the same way as seriously wounded, except that no one is left with the body, which is concealed for later pickup.

(3) Prisoners are bound and gagged, and they may be blindfolded. They may then be taken under guard to a friendly area. They may be evacuated by air, taken with the patrol, or concealed for later pickup.

7-12. Reentry of friendly lines.

a. The reentry of a patrol through another unit's lines can be confusing and dangerous if not well coordinated. The leader must coordinate the reentry with the friendly unit commander before the patrol leaves on its mission.

b. When a patrol returns to friendly lines, it stops at the reentry rally point just short of the friendly unit, out of sight and sound of OPs. The leader transmits a radio message (a prearranged code word) to tell the friendly unit that the patrol is ready to reenter. The message must be acknowledged before the patrol moves in. This is done to make sure that men of the friendly unit do not shoot at the returning patrol. If radio communications are not possible, one patrol member should contact an OP using the challenge and password. Once contact is made, the OP can then relay a message to the unit's commander. The friendly unit then sends a guide to lead the patrol through its position. The leader should pass on to the friendly unit commander any information of tactical value.

c. If communications are established, and the friendly unit is prepared to guide the patrol through the lines, the patrol moves forward to the reentry point. The guide and leader exchange signals to identify the patrol. Once identified, the patrol moves forward and is led through the lines by the guide. The assistant leader should stay at the reentry point and count the men going through the lines. This will ensure that only the members of the patrol reenter friendly lines.

d. If no communications can be established, or if no OPs can be found, and if a reentry point was coordinated before the patrol's departure, the patrol can still conduct reentry. The leader takes a small security team with him to reconnoiter for the reentry point. He leaves the rest of the patrol outside of small arms range of friendly lines. He avoids probing around wire obstacles. One way to find the reentry point when visibility is poor is to have the guide from the friendly lines turn on an infrared light or a flashlight shielded with a red lens. (This must be coordinated before the patrol departs friendly lines; for example, at a predetermined time and place, the guide from the friendly unit turns on the light [for 30 seconds] every half hour during a 3-hour period. Note that this method must be used judiciously because of the enemy's capability to detect infrared sources.) Either type of light is easy to see with a starlight scope. The leader then makes contact with the guide. He then sends two men to bring the patrol forward. The guide then leads the patrol through the lines. The assistant leader should stay at the reentry point and count the men as they go through the lines.

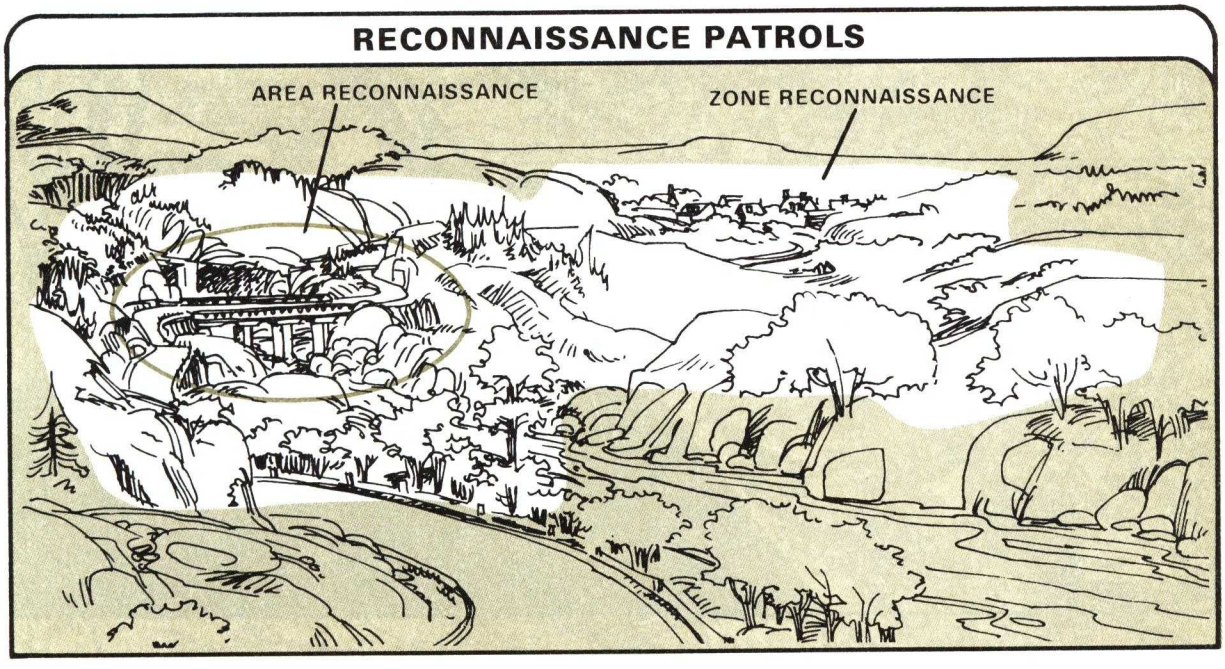
Section IV. Reconnaissance Patrol

Reconnaissance patrols provide timely and accurate information of the enemy and terrain. The commander must tell the patrol leader what the specific intelligence collection requirements are for each mission.

7-13. Types of reconnaissance patrols.

a. **Area reconnaissance.** This is a reconnaissance conducted to obtain information concerning a specific location and the area immediately around it (for example, road junction, hill, bridge, enemy position). The location of the objective is designated by either grid coordinates or a map overlay with a boundary line encircling the area.

b. **Zone reconnaissance.** This is a reconnaissance conducted to obtain information on all enemy, terrain, and routes within a specific zone. The zone is defined by boundaries.

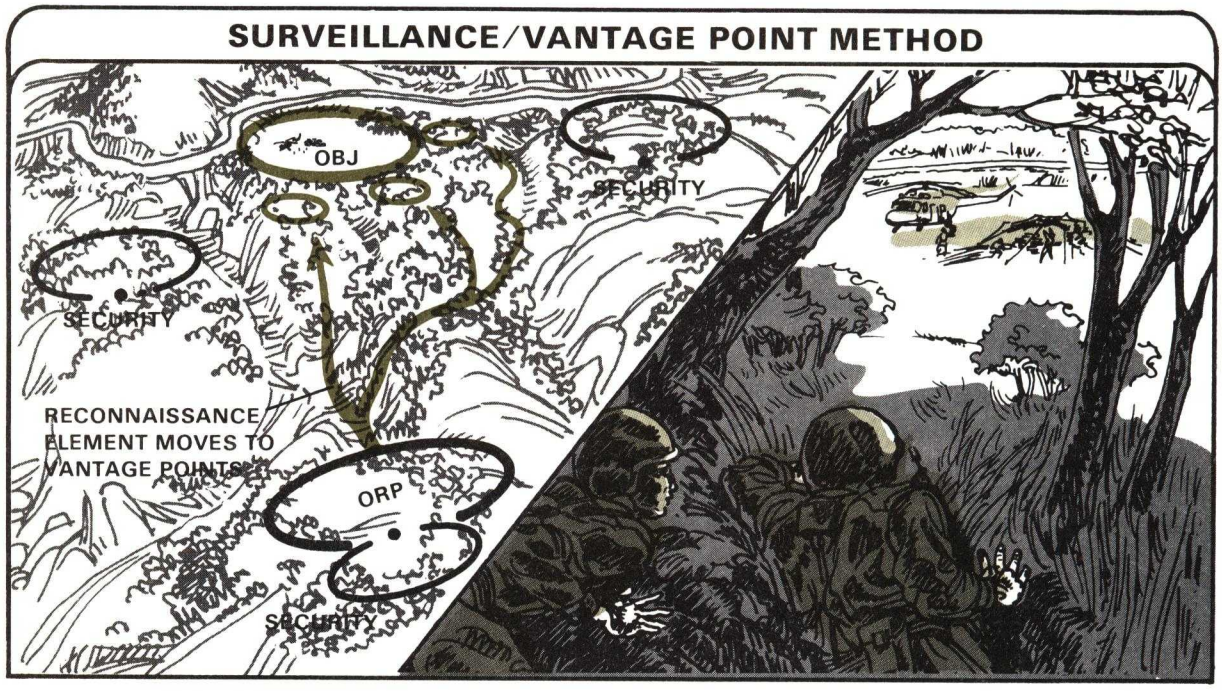


7-14. Conduct of an area reconnaissance.

a. A patrol uses the surveillance/vantage point method to conduct an area reconnaissance. The leader uses a series of surveillance/vantage points around the objective from which to observe it and the surrounding area.

b. The patrol halts in the ORP and establishes security. The leader confirms the patrol's location. The leaders conduct a leaders' reconnaissance of the objective area to confirm the plan and then return to the ORP. The security element leader positions security teams at the ORP and on likely enemy avenues of approach going into the objective area.

c. Once the security teams are in position, the reconnaissance element departs the ORP. The reconnaissance element moves to several surveillance/vantage points around the objective. The reconnaissance element leader may decide to have a small reconnaissance team move to each surveillance/vantage point instead of having the entire element move as a unit from point to point. Once the objective has been reconnoitered, the elements return to the ORP and disseminate their information.

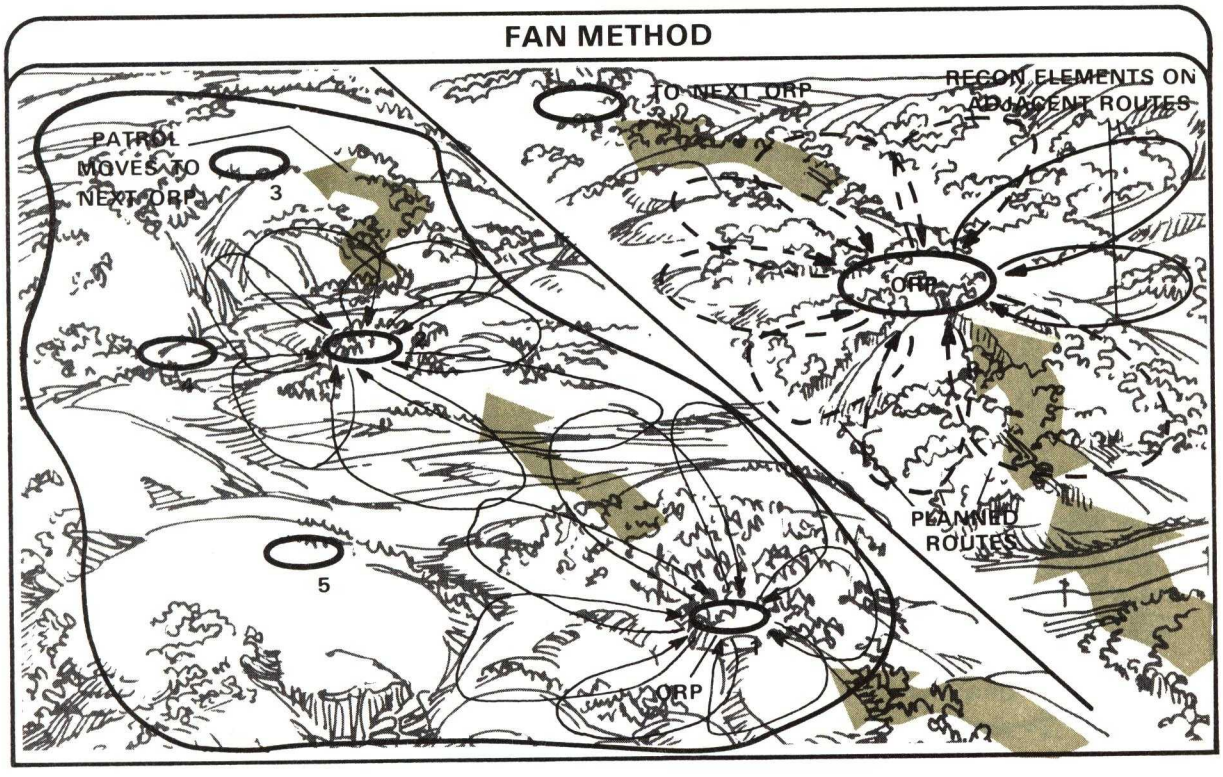


d. The terrain may not allow a patrol to secure an objective area. In this case, the leader leaves a security team in the ORP and uses reconnaissance and security teams to reconnoiter the objective. These teams move to different surveillance/vantage points from which they reconnoiter the objective. Once the objective has been reconnoitered, the reconnaissance and security teams return to the ORP and disseminate their information. The patrol then returns to friendly lines.

7-15. Conduct of a zone reconnaissance.

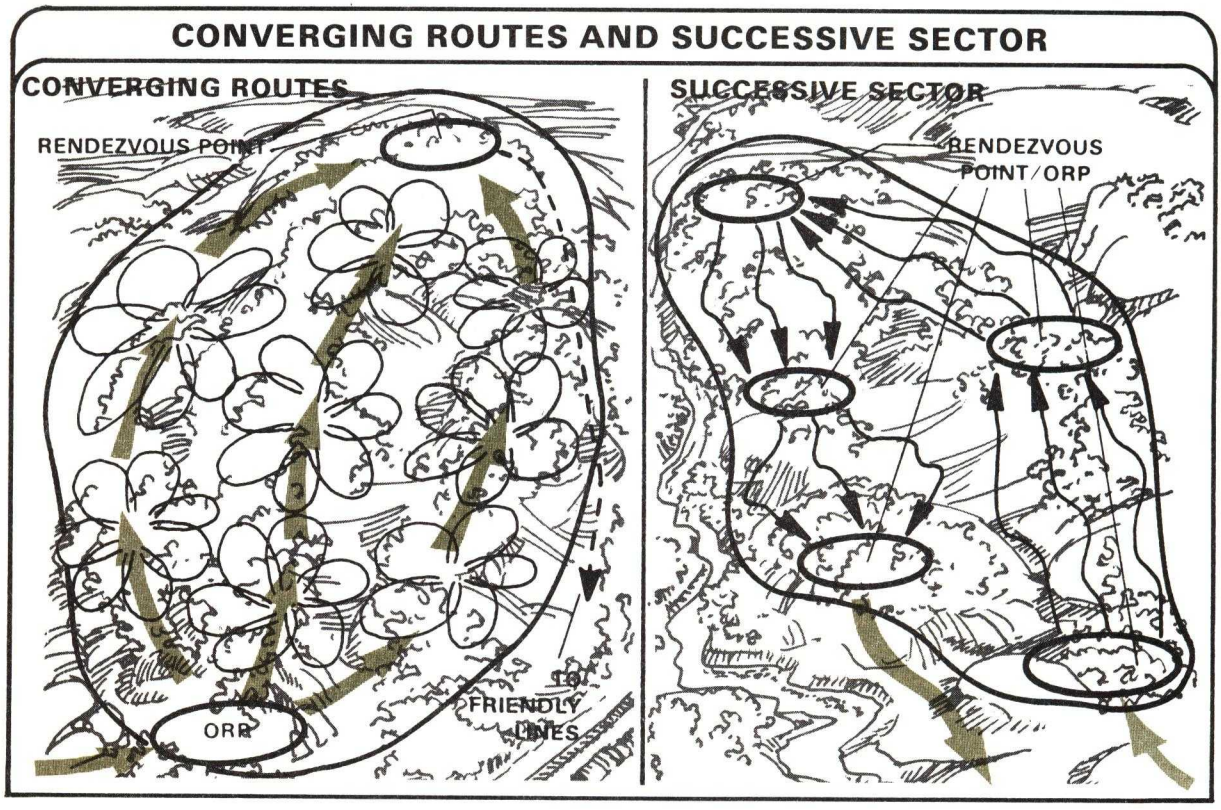
There are three basic methods of conducting a zone reconnaissance —fan method, converging routes method, and successive sector method.

a. **Fan method.** The leader of the patrol first selects a series of ORPs throughout the zone from which to operate. When the patrol arrives at the first ORP, it halts and establishes security. The leader confirms the patrol's location. He then selects reconnaissance routes out from and back to the ORP. (These routes form a fan-shaped pattern around the ORP. The routes must overlap to ensure that the entire area has been reconnoitered.) Once the routes have been selected, the leader sends out reconnaissance elements along the routes. He does not send out all of his elements at once. He keeps a small reserve in the ORP. (For example, if the patrol has three reconnaissance elements, only two are sent out. The other one is kept as a reserve.) Additionally, the leader sends the elements on adjacent routes. This avoids having the patrol make contact in two different directions. After the entire area (fan) has been reconnoitered, the information obtained is disseminated. The patrol then moves to the next ORP. This action is repeated at each successive ORP.



b. **Converging routes method.** The leader of the patrol first selects an ORP, then selects reconnaissance routes through the zone, and then selects a rendezvous point where patrol members are to link up after the reconnaissance. A reconnaissance element is sent out on each route. The leader normally moves with the center element. The elements normally reconnoiter their routes using the fan method. The entire patrol links up at the rendezvous point at the designated time. Once the patrol arrives at the rendezvous point, it halts and establishes security. The leader confirms the patrol's location.

c. **Successive sector method.** This method is basically a continuation of the converging routes method. The leader selects an ORP and a series of reconnaissance routes and rendezvous points. The actions of the patrol from each ORP to each rendezvous point are the same as in the converging routes method. (Each rendezvous point becomes the ORP for the next phase.) When the patrol links up at a rendezvous point, the leader again designates reconnaissance routes, a linkup time, and the next rendezvous point. This action continues until the entire zone has been reconnoitered. Once the reconnaissance is completed, the patrol returns to friendly lines.



Section V. Combat Patrol

Combat patrols provide security, and harass, destroy, or capture enemy troops, equipment, and installations.

7-16. Ambush patrol.

a. An ambush is a surprise attack from a concealed position on a moving or temporarily halted target. It may include an assault to close with and destroy the target, or the attack may be by fire only. It does not require that ground be seized and held. It enables a small unit with few weapons and little equipment to harass or destroy a larger, better armed unit.

b. There are two types of ambush: point and area. In a point ambush, troops deploy to attack a single kill zone. In an area ambush, troops deploy as two or more related point ambushes.

c. An ambush is categorized as either hasty or deliberate.

d. A hasty ambush is a battle drill, as discussed in Section III.

e. A deliberate ambush is planned as a specific action against a specific target. Detailed information of the target is required, such as size, organization, weapons and equipment carried, route and direction of movement, and times the target will reach or pass certain points on its route. Deliberate ambushes are planned when reliable information is received on the expected movement of a specific target; and when patrols, convoys, carrying parties, or similar targets establish patterns of size, time, and movement sufficient to permit detailed planning for their ambush.

f. Ambushes are described in the following terms:

(1) **Ambush site.** The ambush site is the terrain on which a point ambush is established.

(2) **Kill zone.** The kill zone is the part of an ambush site where fire is concentrated to isolate, trap, and destroy the target.

(3) **Assault element.** The assault element is the part of the ambush patrol that fires into and assaults the kill zone.

(4) **Support element.** The support element is the part of the ambush patrol that supports the assault element by firing into and around the kill zone.

(5) **Security element.** The security element is the early warning and security part of an ambush patrol. It secures the ORP, and blocks enemy avenues of approach into and out of

the ambush site. It does this to prevent any enemy from getting into or out of the ambush site.

7-17. Keys to a successful ambush.

a. **Surprise.** Surprise is a major feature that distinguishes an ambush from other forms of attack. It is surprise that allows the patrol to seize control of the situation. If complete surprise cannot be achieved, it must be so nearly complete that the target does not know of the ambush until too late for effective reaction. Surprise is achieved by good planning, preparation, and execution.

b. **Coordinated fire.** All weapons, including mines and demolitions, must be positioned, and all fire, including that of supporting artillery and mortars, must be coordinated. The goals are to isolate the kill zone, to prevent escape or reinforcement, and to deliver a large volume of highly concentrated surprise fire into the kill zone. This fire must inflict maximum damage so that the target, when required, can be quickly assaulted and destroyed.

c. **Control.** Close control must be maintained during movement to, occupation of, and withdrawal from the ambush site. Control is most critical at the time of the target's approach. Control measures must provide for —

(1) Early warning of target approach.

(2) Withholding fire until the target has moved into the kill zone.

(3) Opening fire at the proper time.

(4) Initiation of proper action if the ambush is prematurely detected.

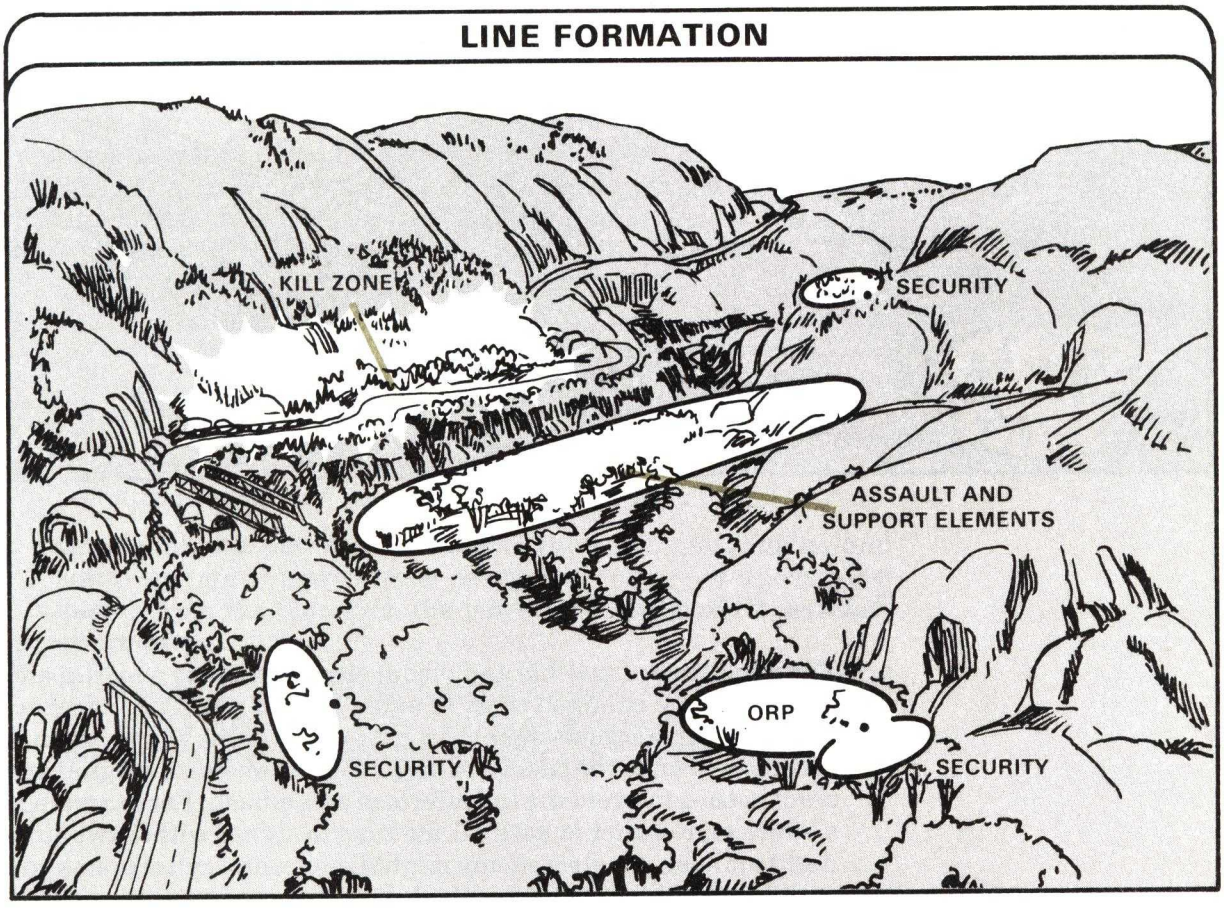
(5) Lifting or shifting of supporting fire when the attack includes assault of the target.

(6) Timely and orderly withdrawal of the patrol to the ORP.

7-18. Ambush formations.

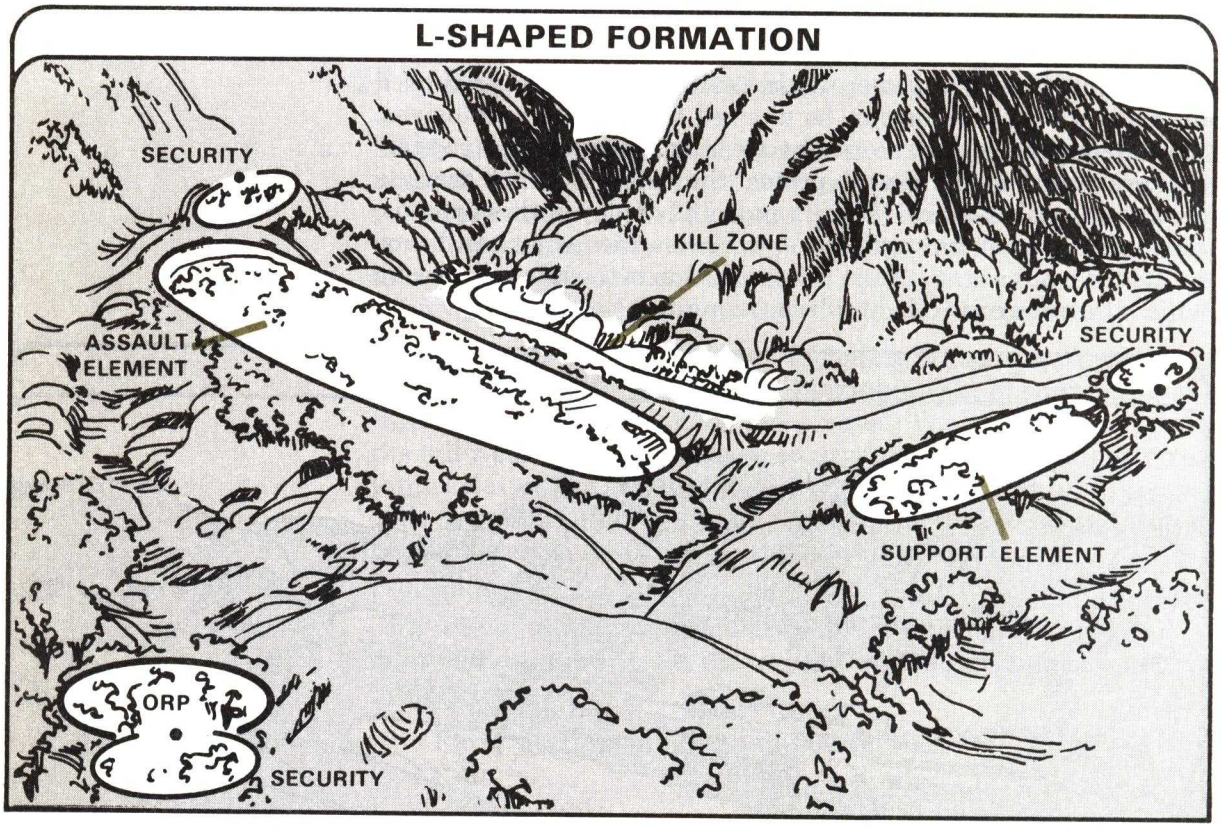
a. **Line.** In an ambush employing a line formation, the assault and support elements are deployed generally parallel to the target's route of movement (road, trail, stream). This positions the assault and support elements parallel to the long axis of the kill zone and subjects the target to flanking fire. The size of a target that can be trapped in the kill zone is limited by the size of the area that can be covered with a full volume of fire by the assault and secur-

ity elements. The target is trapped in the kill zone by natural obstacles, mines (Claymore, antitank, antipersonnel), explosives, and direct and indirect fire. A disadvantage of the line formation is that its target may be so dispersed that it is larger than the kill zone. The line formation is good in close terrain that restricts the target's movement, and in open terrain where one flank is blocked by natural obstacles or can be blocked by mines or explosives. Similar obstacles may be put between the assault and support elements and the kill zone to protect the patrol from the target's counterambush actions. When a patrol is deployed this way, access lanes are left through the obstacles so the target can be assaulted. An advantage of the line formation is the relative ease by which it can be controlled under all conditions of visibility.



b. **The L.** The L-shaped formation in an ambush is a variation of the line formation. The long leg of the "L" (assault element) is parallel to the kill zone. This provides flanking fire. The short leg (support element) is at the end of, and at a right angle to, the kill zone. This provides enfilade fire that interlocks with fire from the other leg.

This formation can be deployed on a straight stretch of trail, road, or stream, or at a sharp bend.



7-19. Signals.

a. The meanings of audible and visual signals such as whistles and flares must be changed often to avoid setting patterns. Repeated use of the same signals or unchanged meanings may cause them to become known to the enemy. A target might recognize a signal and react in time to avoid the full effects of an ambush. For example, if a white star cluster is used all the time to signal withdrawal in a night ambush, an alert enemy might fire one and cause premature withdrawal of the ambush patrol.

b. There are normally four signals needed for the ambush.

(1) **Target's approach.** A signal by a security team to alert the leader of the target's approach.

(2) **Start ambush.** A signal to start the ambush, given by the leader or a man he designates. This must be a casualty-

producing signal, such as machine gun fire or the detonation of mines or explosives.

(3) **Shift fire.** A signal to shift fire when the target is to be assaulted. Voice, whistles, or flares may be used. All fire must stop or be shifted at once so that the assault can be made before the target can react.

(4) **Withdraw.** A signal to withdraw. This can be by voice, whistle, or flare.

7-20. Fire discipline.

Fire discipline is a key part of the ambush. Fire must be withheld until the signal is given, then delivered at once in the heaviest, most accurate volume possible. Well-trained gunners and well-aimed fire help achieve surprise as well as the destruction of the target. When the target is to be assaulted, the lifting or shifting of fire must also be precise. If it is not, the assault is delayed, and the target has a chance to react.

7-21. Withdrawal to the ORP.

a. Routes of withdrawal to the ORP are reconnoitered. Situation permitting, each man reconnoiters the route he is to go.

b. On signal, the patrol withdraws to the ORP, reorganizes, and starts its return march. At a set terrain feature or about 1,000 meters from the objective, the patrol will halt and disseminate information.

c. If the ambush fails and the patrol is pursued, withdrawal may be by bounds. Smoke should be used to help conceal the withdrawal. Mines set along the withdrawal routes can help stop the pursuit.

7-22. Conduct of a point ambush.

a. A point ambush, by itself or as part of an area ambush, is positioned on its target's expected route of approach. The ambush formation is important because, to a great extent, it determines whether a point ambush can deliver the heavy volume of fire necessary to isolate, trap, and destroy the target.

b. The formation to be used is based on the advantages and disadvantages of each possible formation in relation to the:

(1) Terrain, visibility, troops available, weapons, and equipment.

(2) Ease of control.

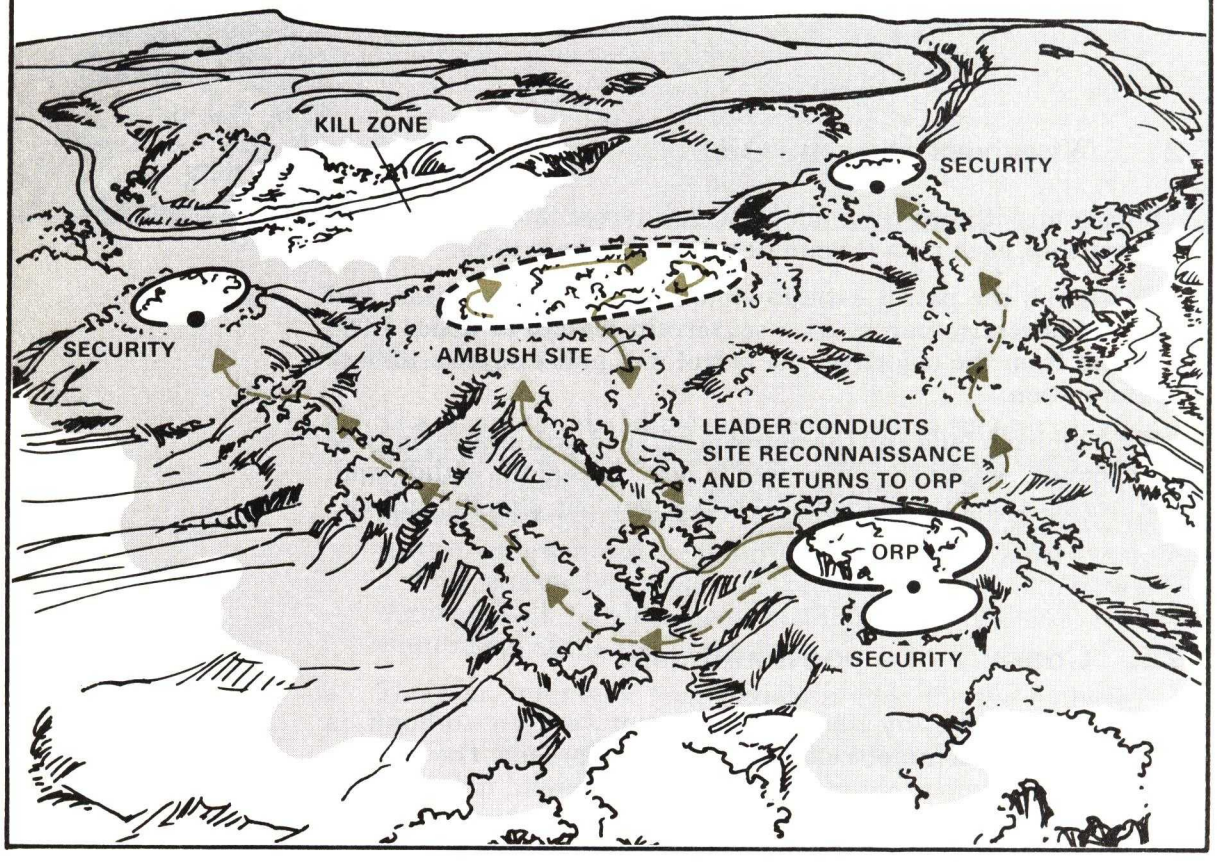
(3) Target to be attacked.

(4) Overall combat situation.

c. The patrol halts at the ORP and establishes security. The leader confirms the patrol's location. The leader then conducts a reconnaissance of the objective area to confirm the plan, and he returns to the ORP.

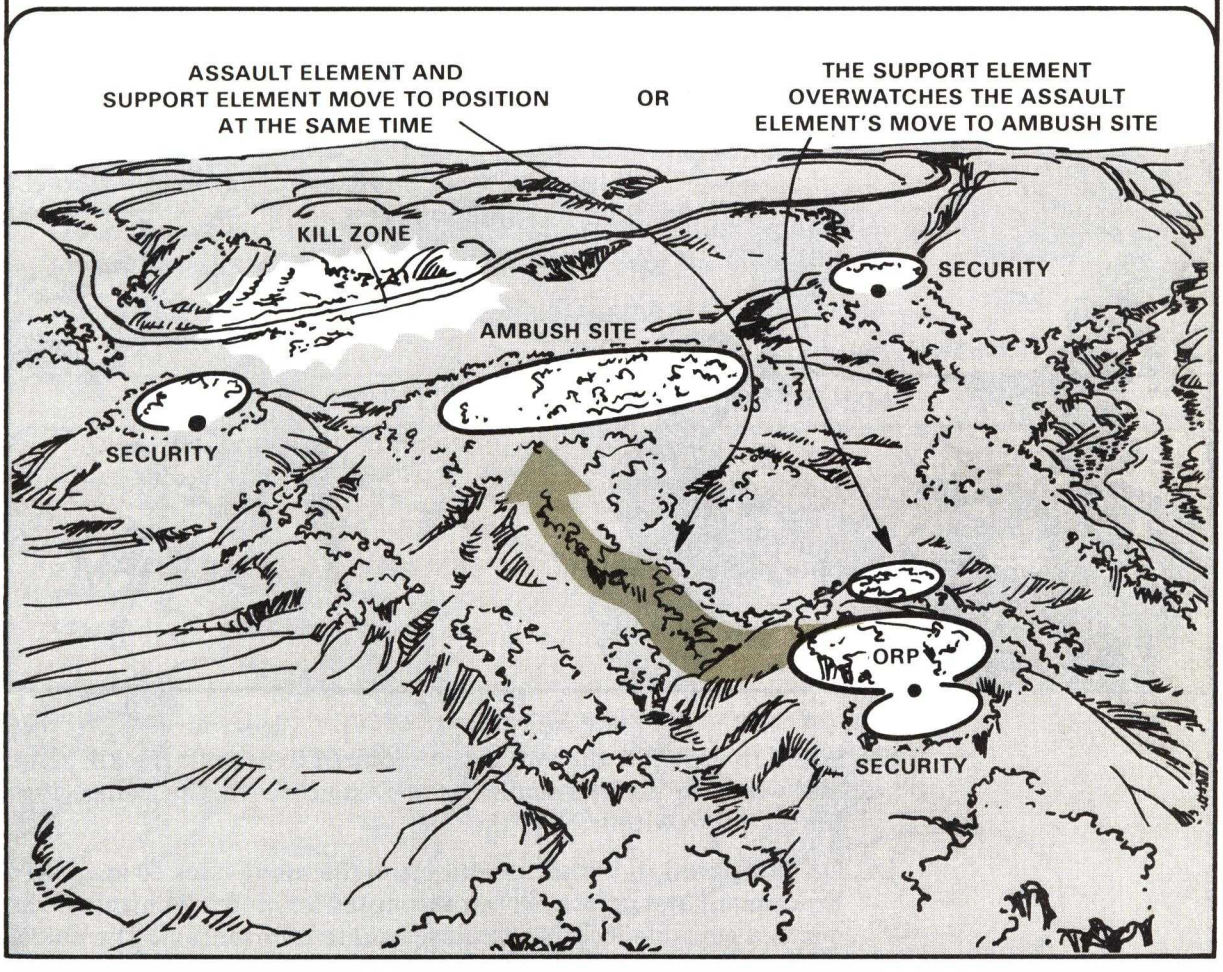
d. The security element leaves the ORP first. The teams of the security element move to positions from which they can secure the ORP and the flanks of the ambush site.

SECURITY TEAMS IN POSITION



e. When the security teams are in position, the support and assault elements leave the ORP and occupy their positions. If there is a suitable position, the leader may have the support element overwatch the assault element's move to the ambush site. If not, both elements leave the ORP at the same time.

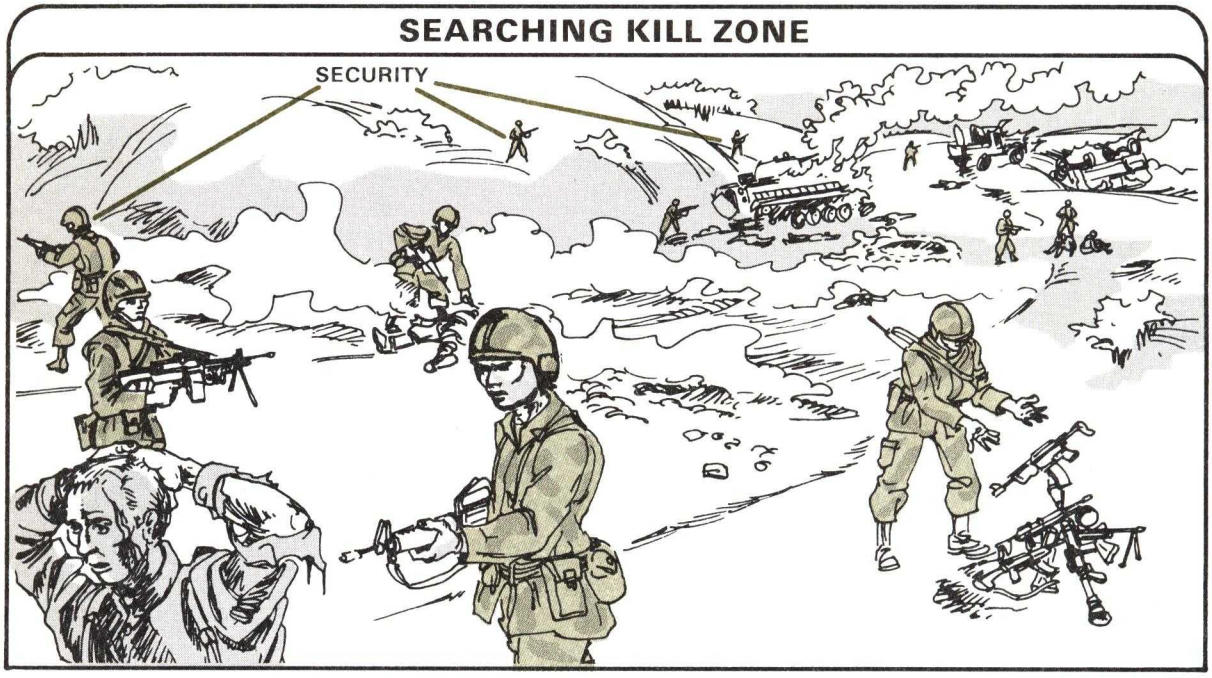
ASSAULT ELEMENT MOVES TO AMBUSH SITE



f. Once all elements are in position, the patrol awaits the target. When the target approaches, the security team spotting it alerts the leader of the patrol. The security team should report the target's direction of movement, size, and any special weapons or equipment.

g. Upon receipt of the report, the leader relays the alert to other elements. When the major part of the target is in the kill zone, the leader gives the signal to start the ambush.

h. When the assault element is required to assault the kill zone, the leader of the patrol gives the signal to lift or shift fire. This is also the signal for the assault to start. Besides destruction of the enemy force, additional tasks in the kill zone may include searching for items of intelligence value, capturing prisoners, and completing the destruction of enemy equipment to preclude its immediate reuse. When the assault element has finished its mission in the kill zone, the leader gives the signal to withdraw to the ORP.



i. When the assault element is not required to assault the kill zone, and when the desired results have been achieved, the leader gives the signal to withdraw to the ORP.

j. On the signal to withdraw, all elements move back to the ORP. Equipment and personnel are accounted for, and the patrol moves out to a suitable location to disseminate information. The patrol then returns to friendly lines.

7-23. Conduct of an area ambush.

a. An area ambush, not normally conducted by a unit smaller than a platoon, works best where enemy movement is largely restricted to trails or streams. The area selected should offer several suitable point ambush sites. The platoon leader must select one central

ambush site around which he can organize the outlying ambushes. Squad-size patrols occupy the ambush sites.

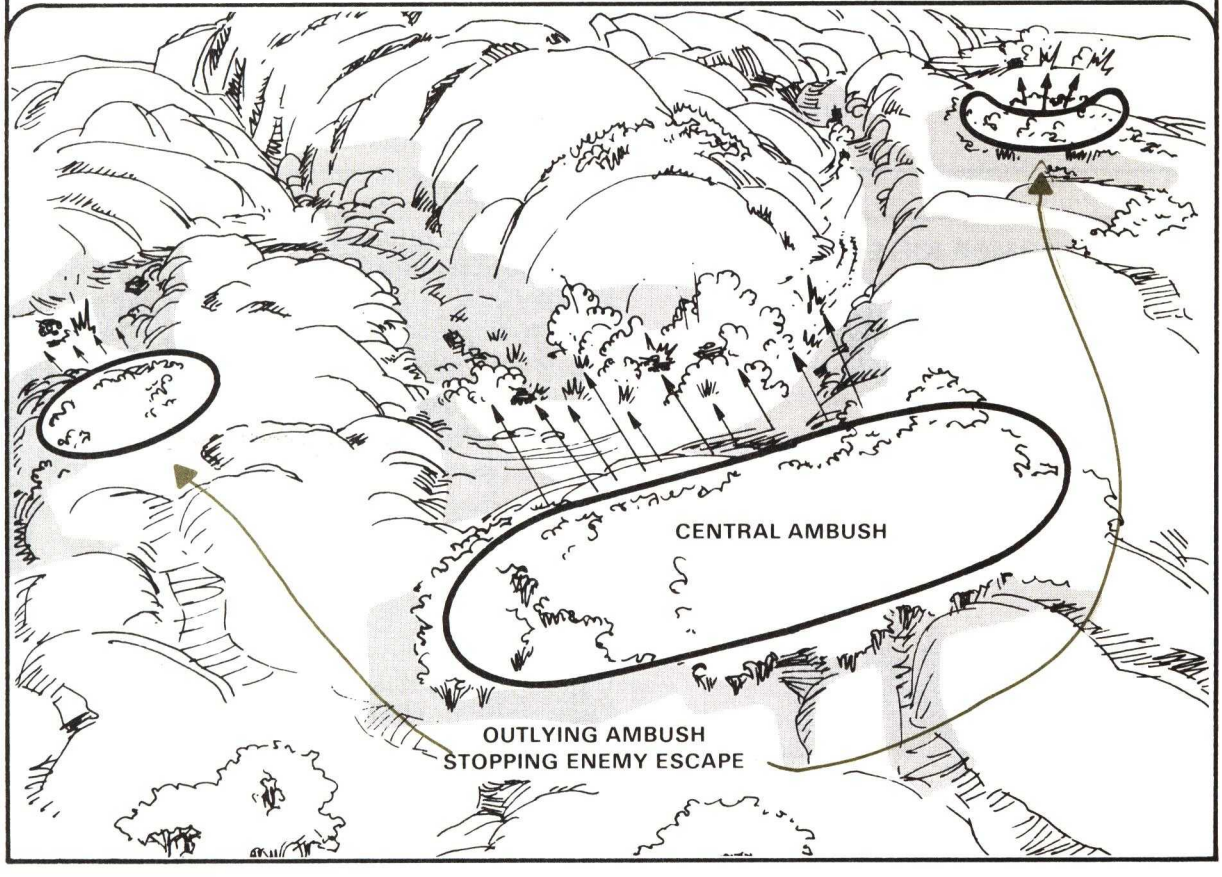
b. Once the central ambush site has been selected, the platoon leader must determine the enemy's possible avenues of approach to the site and escape from it. He then selects and assigns ambush sites to cover these avenues. The ambush sites are established as explained for a point ambush.

c. Once the sites have been established, all enemy traffic going toward or away from the central ambush site is reported to the platoon leader — who is at the central ambush site. The outlying ambushes should allow the enemy to pass through their kill zones until the central ambush has been initiated.

d. Once the central ambush is initiated, the outlying ambushes prevent enemy troops from escaping or entering the area.

e. The actual conduct of the ambushes is the same as that discussed for the point ambush.

EXECUTING THE AREA AMBUSH



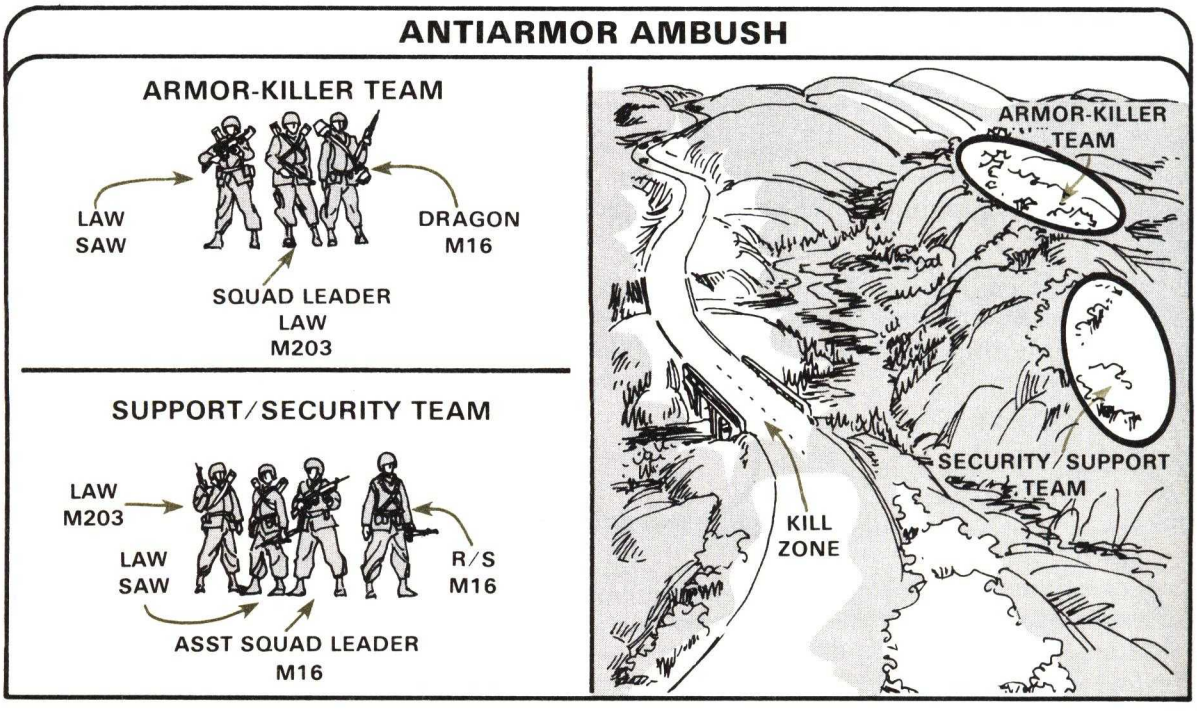
7-24. Squad antiarmor ambush.

a. **Organization.** The purpose of an antiarmor ambush is to destroy armored vehicles. A squad can conduct a dismounted antiarmor ambush, but the limited number of dismount troops in the squad may have to be augmented. The leader organizes an armor-killer team and a support/security team.

(1) **The armor-killer team.** The armor-killer team fires into the kill zone. Normally, the Dragon is the main weapon of this team. LAWs and SAWs may be used to supplement its fire. Where fields of fire are less than 100 meters, LAWs may be the main antiarmor weapon. In that case, the armor-killer team must mass LAW fire into the kill zone to make sure the target vehicle is killed.

(2) **The support/security team.** The support/security team provides support and security for the squad and should be positioned where it can cover the withdrawal of the armor-killer team.

b. **Execution.** The platoon leader will give the general location of the antiarmor ambush site. The squad leader must pick the best place to put his squad. The squad position is based primarily on the location of the kill zone. When the squad arrives at the ambush site, the leader reconnoiters and picks the kill zone.



(1) Having selected a kill zone and ambush site, the squad leader picks positions for the teams. Good positions have:

(a) Good fields of fire into the kill zone.

(b) Cover and concealment.

(c) An obstacle between the teams and the kill zone.

(d) Covered and concealed withdrawal routes.

(2) After choosing the kill zone and the team's positions, the squad leader positions his men and equipment.

(3) The support/security team is positioned first. It is important to have security on both flanks. These men may have to be repositioned after the armor-killer team sets up, but when setting up an ambush, the leader must post security first.

(4) As soon as the ambush site is secure, the armor-killer team sets up so that it can cover the kill zone. The squad leader and the Dragon gunner pick the exact firing position. Once the Dragon is in position, the machine gun is positioned where it can cover the kill zone.

(5) The squad leader positions himself where he can best control his men and weapons — normally near the Dragon. When the enemy enters the kill zone, the leader initiates the ambush. A command-detonated antiarmor mine is an excellent means to start the ambush. It must be command-detonated, not "tripped." This precludes initiating an ambush against too large a force or on undesirable targets. The Dragon can be used to initiate the ambush — but remember, it has a slow rate of fire, gives off a signature, and may not hit the target. When possible, the first and last enemy vehicles of a column should be destroyed to keep other vehicles from escaping.

(6) The rest of the squad opens fire when the ambush is initiated. Indirect fire should fall in the kill zone as soon as possible. If the kill zone is in range, each man in the squad (except the Dragon gunner and a SAW gunner) fires a LAW. The SAW gunner fires into the kill zone.

(7) If enemy troops on foot precede armored vehicles into the kill zone, the squad leader must decide if they pose a threat to the ambush. If they can outflank his squad before the enemy armor can be hit, he may decide to withdraw without making contact and try to set up another ambush somewhere else. If the enemy infantry is an immediate threat to the squad or appears to be ready to find or trip any mechanical devices, the

ambush is initiated with SAWs. All action against enemy infantry is just as was planned and rehearsed for action against armor, except that the antiarmor weapons do not fire.

(8) Because of the speed with which other enemy armored vehicles may react, and the responsiveness of enemy artillery, the squad must spring the ambush, break contact, and get out of the area quickly. When mounted enemy infantrymen approach the kill zone, their carriers are treated like light tanks. They should be allowed to get close before being destroyed, one at a time. If mounted infantry is mixed with tanks, the tanks should be the target for the Dragon. After the Dragon is fired, the enemy's carriers are hit with LAWs and grenade launchers (using HEDP rounds).

7-25. Platoon antiarmor ambush.

The platoon is a good-size unit to conduct a dismounted antiarmor ambush. The platoon leader must consider the same criteria for site selection, firing positions, and conduct of the ambush as previously described for the squad leader. Additionally, the platoon leader must organize the ambush into assault, security, and support elements. When the ambush has been completed, the platoon leader gives the order to withdraw to the ORP. At the ORP, a quick headcount is taken, necessary adjustments in personnel and equipment are made, and the platoon moves out.

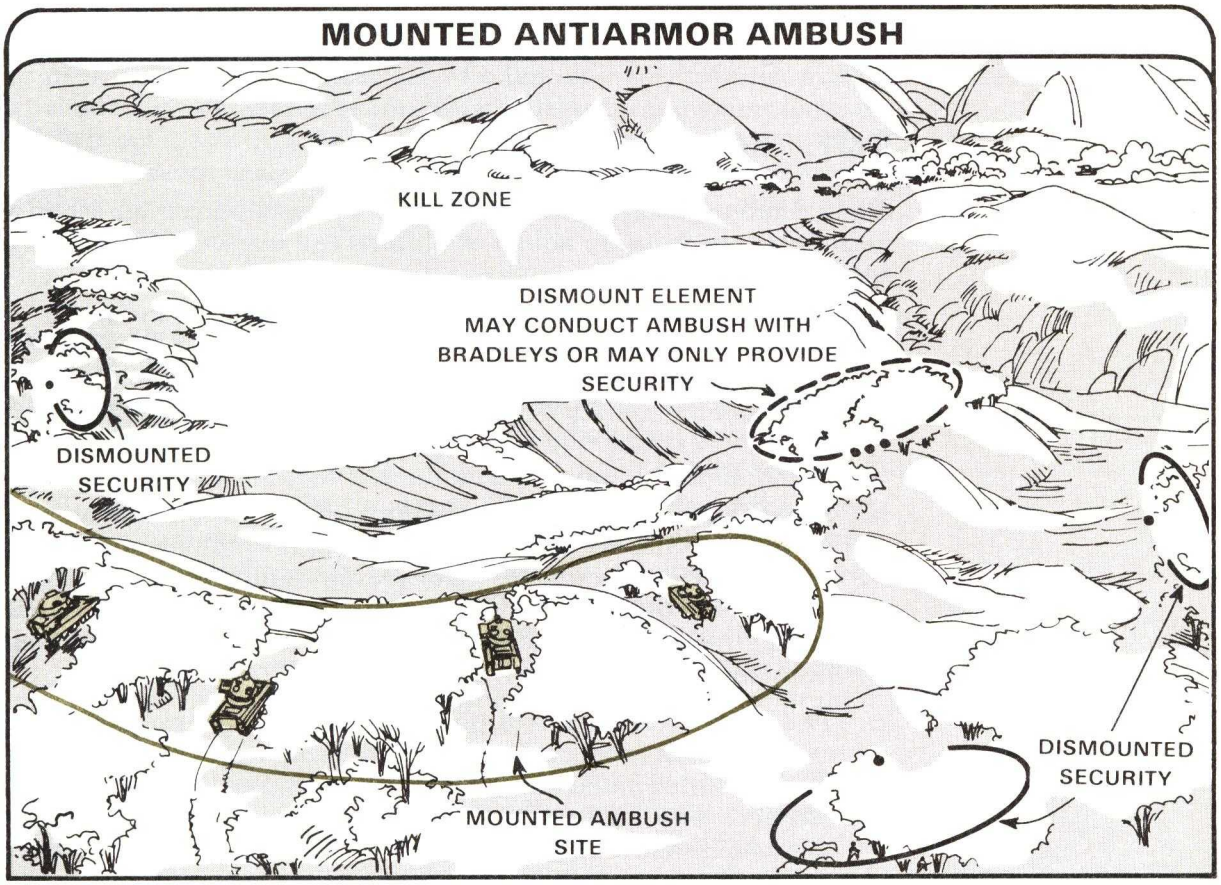
7-26. Mounted antiarmor ambush.

a. The BFV's mobility and firepower allow infantry squads and platoons to conduct devastating antiarmor ambushes. The dismount element and the BFVs can execute an ambush using three different variations.

(1) **Dismount element used for close-in security:** Infantry dismounts and provides local security for BFVs. This type of ambush allows the BFVs to achieve maximum standoff by organizing the ambush around the turret weapons and using the rifle teams to provide local vehicle security. This method facilitates remounting and leaving the ambush vicinity before the enemy can react with additional forces. The disadvantages of this method are that it does not use the firepower of the dismounted infantry in the kill zone and does not allow for the kill zone to be overrun and checked by the ambushing unit.

(2) **Same kill zone:** BFVs and infantry conduct the ambush into the same kill zone. This type of ambush places maximum fires into the kill zone. Additionally, it allows for the dismounted infantry to overrun and check the kill zone. To achieve standoff, the BFVs must normally locate away from the dismounted element, thus complicating the command and control of the operation as well as the remount and withdrawal from the ambush site.

(3) **Different kill zones:** BFVs and infantry conduct an ambush into different kill zones. This method takes advantage of the flexibility offered by being able to separate the BFVs and dismount elements of the Bradley platoon. The two elements can cover two kill zones as part of the same ambush either to drive the enemy from one kill zone to another or to ambush enemy reinforcements coming to the aid of units caught in the first kill zone. This is the most difficult ambush to control and requires detailed remount planning to ensure that the Bradley platoon can withdraw from the ambush site before the enemy can respond with significant forces.


MOUNTED ANTIARMOR AMBUSH
KILL ZONE
DISMOUNT ELEMENT MAY CONDUCT AMBUSH WITH BRADLEYS OR MAY ONLY PROVIDE SECURITY
DISMOUNTED SECURITY
DISMOUNTED SECURITY
MOUNTED AMBUSH SITE

b. The same considerations apply to the mounted antiarmor ambush for site selection and firing positions as previously discussed for the dismounted antiarmor ambush.

(1) Additional considerations for the mounted antiarmor ambush include elements that can be at extended ranges from the kill zone because of the capabilities of the BFV weapons. Also, if the platoon is conducting the ambush, the dismount element should be organized into an assault and a security element, while the BFVs constitute the support element. The BFVs can also be used as an overwatch force to assist the dismount element in disengaging.

(2) The ORP must be selected to allow the dismount teams to link up with their vehicles. This may require both elements moving to an ORP. In this case, the ORP should be close to the dismount element.

(3) Weapons-ready posture should be observed so the ambush can be conducted with surprise and violence. Violence is generated by heavy volume fire.

7-27. Security patrol.

Some combat patrols provide security. The most common security patrol that the infantry squad or platoon can expect to perform is a screen.

a. A screen requires a unit to maintain surveillance and provide early warning by maintaining at least visual contact with the enemy. A screening force must impede and harass the enemy by organic and supporting fires and, within its capability, must destroy or repel enemy patrols.

b. Screening patrols prevent surprise attacks on the flanks of moving units. They also reconnoiter areas through which units will pass and the routes they will use. They prevent infiltration and surprise attacks on stationary units by screening their front and flanks and by reconnoitering gaps between the units and around their positions.

c. The leader of the patrol picks a series of observation posts overwatching enemy avenues of approach into an area. Mounted or dismounted patrols are used to cover dead space and maintain contact between OPs. If the patrol makes contact, it reports to the commander and attacks or withdraws according to the commander's instructions.

7-28. Raid patrol.

a. A raid patrol is a combat patrol whose mission is to attack a position or installation for any or all of these purposes:

(1) Destroy the position or installation.

(2) Destroy or capture troops or equipment.

(3) Liberate personnel.

b. Surprise, firepower, and violent action are the keys to a raid.

(1) *Surprise* is best achieved by attacking when the enemy may least expect an attack, when visibility is poor, and when the attack is from an unexpected direction, such as from the rear or through a swamp or other seemingly impassable terrain.

(2) *Fire* is concentrated at critical points to suppress the enemy.

(3) *Violence* is best achieved by gaining surprise, by using massed fire, and by attacking aggressively.

c. The patrol moves to the ORP as described for a reconnaissance patrol. The ORP is secured, the leaders' reconnaissance is conducted, and plans are confirmed. Elements and teams move to their positions. If possible, their movements are coordinated so that all reach their positions about the same time. This improves the patrol's capability for decisive action if it is detected by the enemy too soon.

(1) **Security element.** The teams of the security element move to positions from which they can secure the ORP, give warning of enemy approach, block avenues of approach into the objective area, prevent enemy escape from the objective area, or perform any combination of these tasks within their capability. As the assault and support elements move into position, the security element keeps the leader of the patrol informed of all enemy action. It shoots only if detected or on the leader's order. Once the assault starts, the security element prevents enemy entry into, or escape from, the objective area. When the assault is completed, the security element covers the withdrawal of the assault and support elements to the ORP. It withdraws itself on order or on a prearranged signal.

(2) **Support element.** The support element moves into position so that it can suppress the objective and shift fire when the assault starts. It normally covers the withdrawal of the assault itself on oral order or on signal.

(3) **Assault element.** The assault element deploys close enough to the objective to permit immediate assault if detected by the enemy. As supporting fire is lifted or shifted, the assault element assaults, seizes, and secures the objective. It protects demolition teams, search teams, and other teams while they work. On order or signal, the assault element withdraws to the ORP.

d. At the ORP, the patrol reorganizes and moves about 1,000 meters away to disseminate information. During reorganization, ammunition is distributed, casualties are treated, and status reports are given.

Section VI. Patrol Bases

A patrol base is a position set up when a patrol halts for an extended period. When a patrol must halt for a long time in a place not protected by friendly troops, it must take appropriate measures to secure the position.

Having a patrol base is usually part of the patrol plan, but it may be an on the spot decision.

The time a patrol base may be occupied depends on the need for secrecy. It should not, however, be occupied for more than 24 hours except in an emergency. A patrol base is occupied only as long as necessary for its purpose. A patrol should not use the same patrol base more than once.

Patrol bases are used when there is a need to:

- Stop all movement to avoid detection.
- Hide a patrol during a long, detailed reconnaissance of an objective area.
- Eat, clean weapons and equipment, and rest.
- Plan and issue orders.
- Reorganize after a patrol has infiltrated an enemy area.
- Have a base from which to conduct several consecutive or concurrent operations such as ambush, raid, reconnaissance, or security.

7-29. Selection.

a. The site of a patrol base is usually picked from a map or by aerial reconnaissance during planning. A patrol base site picked by map

or aerial reconnaissance is tentative. Its suitability must be confirmed, and it must be secured before it is occupied.

b. Plans to establish a patrol base must include selection of an alternate patrol base site. The alternate site is used if the initial site is unsuitable or if the patrol is required unexpectedly to evacuate the initial patrol base. It is usually desirable to reconnoiter the alternate site and keep it under watch until occupied or until no longer needed.

7-30. Considerations.

Planning for a patrol base must include consideration of the mission and security measures, both passive and active.

a. **Mission.** A patrol base must be located so that it allows the patrol to accomplish its mission.

b. **Security measures.** The leader selects terrain that would probably be considered of little tactical value by the enemy, difficult terrain that would impede foot movement (such as an area of dense vegetation, preferably bushes and trees that spread close to the ground), and terrain near a source of water.

c. The leader plans for:

(1) OPs.

(2) Communications with OPs.

(3) Defense of the patrol base.

(4) Withdrawal from the patrol base, to include withdrawal routes and a rally point, or rendezvous point, or alternate patrol base.

(5) A security system to make sure that necessary troops are awake at all times.

(6) Enforcement of camouflage, noise, and light discipline.

(7) The conduct of necessary activities with minimum movement and noise.

d. The leader avoids:

(1) Known or suspected enemy positions.

(2) Built-up areas.

(3) Ridges and hilltops, except as necessary for maintaining communications.

(4) Roads, trails, wet areas, steep slopes.

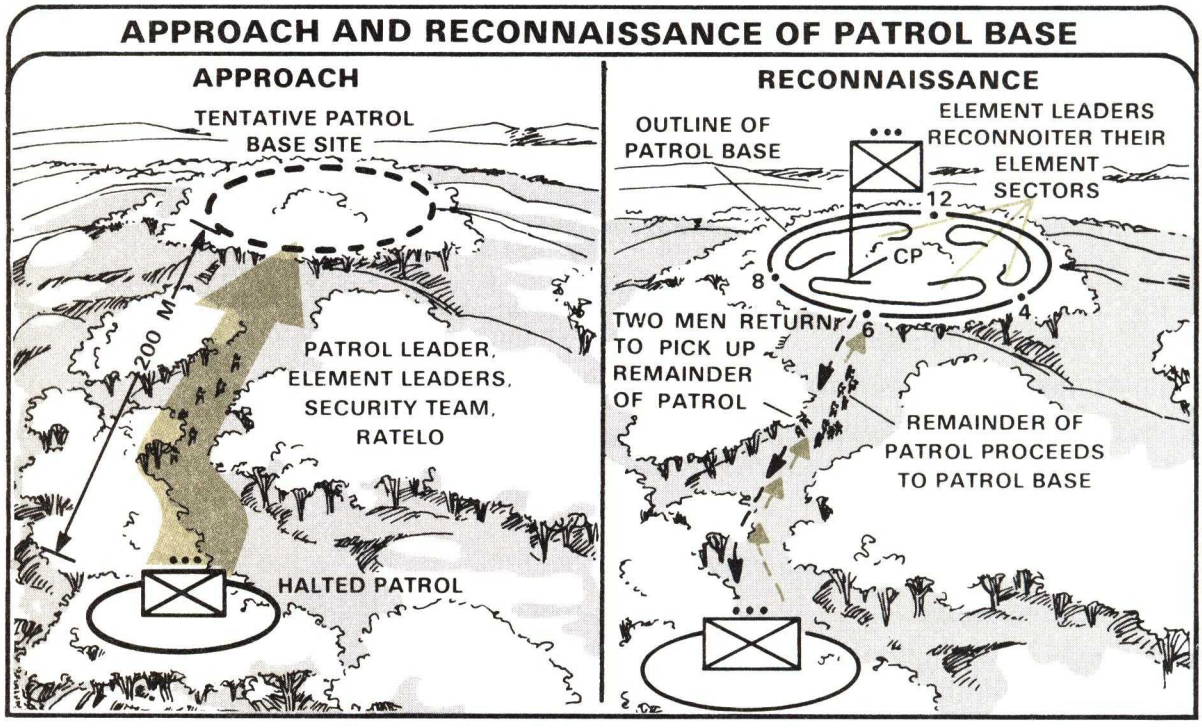
(5) Small valleys.

7-31. Occupation of a patrol base.

A patrol base is reconnoitered and secured before it is occupied. Once secured, a patrol base is occupied by moving to the selected site, deploying into it, and establishing a perimeter defense. The following is an example of a patrol occupying a patrol base.

a. **Approach.** The patrol halts within 200 meters of the tentative patrol occupying a patrol base site. Security is posted. The element leaders, RATELO, and a security team join the leader of the patrol and move forward to reconnoiter the site.

b. **Reconnaissance.** The leader designates the point of entry into the patrol base site as 6 o'clock. He moves to and designates the center of the base as the patrol CP. The element leaders reconnoiter the sectors assigned to them (for suitability), and then return to the CP. The elements would have been given their sectors in the operation order. After the reconnaissance, the leader of the patrol sends two men back to bring the remainder of the patrol forward.



c. **Occupation.** The patrol enters the base in single file. It moves to the center of the base. Designated men remove signs of the patrol's entry into the area.

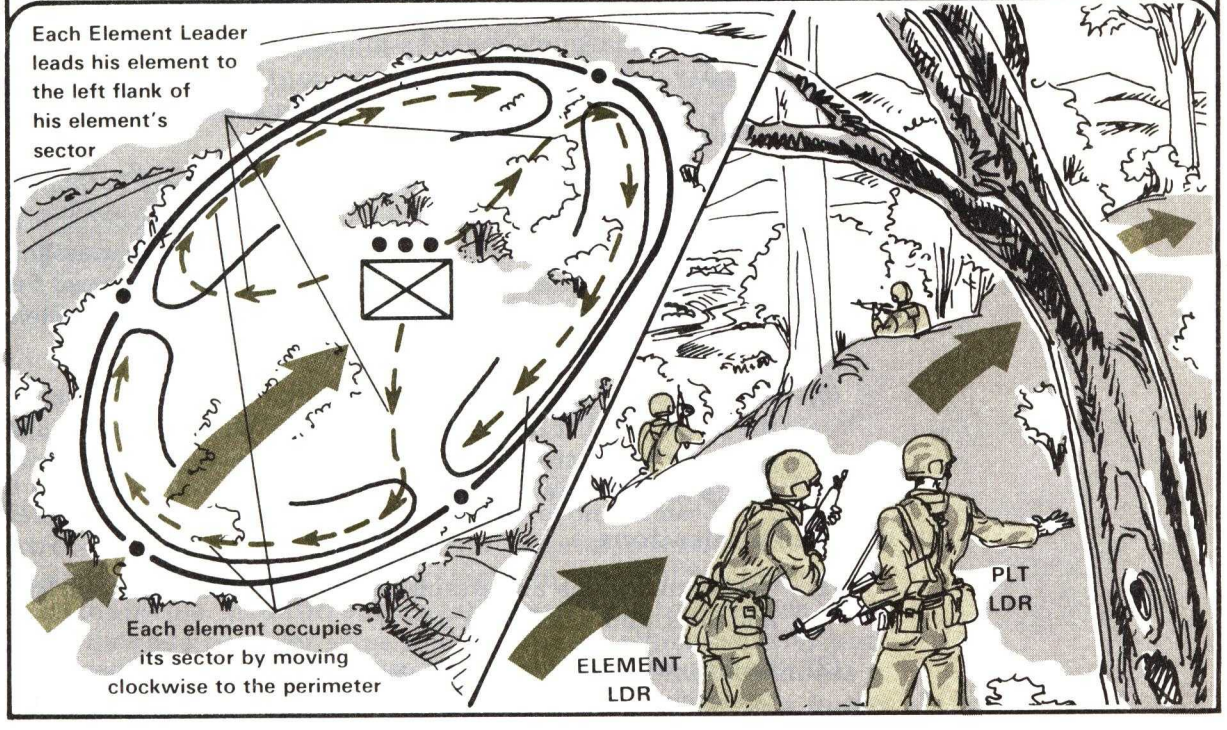
(1) The leader checks the perimeter by meeting each element leader at the left flank of his respective sector. Together, they move clockwise to the end of that sector, making changes as needed. At the end of the sector, the leader meets the element leader of the next sector and repeats the inspection until he has checked his entire perimeter.

(2) Each element leader sends out a reconnaissance and security team to reconnoiter forward of the element's sector. The team moves a set distance out from the left flank of the sector, moves clockwise to the right limit of the sector, and reenters at the right flank of the sector. It reports signs of enemy activity, suitable OP locations, possible rally points, and withdrawal routes.

(3) The leader of the patrol designates withdrawal routes and a rally point outside the base for use in case the patrol is dispersed unexpectedly.

(4) Each element puts out an OP and establishes communications with the patrol command post.

OCCUPYING THE PATROL BASE AND CHECKING THE PERIMETER


Each Element Leader leads his element to the left flank of his element's sector
Each element occupies its sector by moving clockwise to the perimeter
ELEMENT LDR
PLT LDR

7-32. Actions in a patrol base.

a. **Security.**

(1) Security must be a patrol's first priority. Only one point of entry and exit is used. This point is camouflaged and guarded at all times. Only necessary movement should be permitted, both inside and outside the patrol base. Whether day or night, only necessary fires are built. They must be kept small and, if possible, smokeless. Fires are built in pits and, if built at night, are covered and shielded. Noisy work, such as cutting branches, is done only at set times. Such work is done as soon as possible after occupation but never at night or in the quiet periods of early morning and late evening. Noisy work should be done when other noise (sounds of aircraft, artillery, or distant battle) will cover it.

(2) A stand-to is held both morning and evening to ensure that every man adjusts to the changing light and noise conditions, and is dressed, equipped, and ready for action. The stand-to should start before first light in the morning and continue until after dark. The starting and ending times should vary to prevent establishing a pattern, but the stand-to must last long enough to accomplish its purpose.

b. **Defense.**

(1) Defensive measures must be planned, but a patrol base is usually defended only when evacuation is not possible. Complete fighting positions are not built. Camouflage and concealment are stressed.

(2) A fire plan is made. Early warning devices may be put on avenues of approach. If the base definitely must be defended, mines and tripflares should be put on avenues of approach and in places that cannot be covered by fire. The need for these devices must be weighted against the fact that their discovery could compromise the patrol base.

(3) A withdrawal plan is also made. If the patrol is forced to leave the patrol base, it rallies at either a rally point, a rendezvous point, or an alternate patrol base. Each person must know where to withdraw to.

c. **Communications.**

(1) Communications are established with higher headquarters and OPs, and within the patrol.

(2) Radios are a good means of communications, but they must be closely controlled because of the enemy's ability to monitor

the patrol's transmissions and possibly use radio direction finders to find the patrol base.

(3) Wire should be used within the patrol base if its bulk and weight and the time needed to lay and pick it up do not hinder the patrol's ability to accomplish its mission.

(4) Tug or pull wires may be used for signaling. They are quiet and reduce radio or telephone traffic.

d. **Maintenance.** Weapons and equipment are maintained.

e. **Sanitation and personal hygiene.** In daylight, catholes outside the perimeter are used. The user must be guarded. At night, catholes must be inside the perimeter. Men wash, shave, and brush their teeth on a regular basis. Trash is buried in a concealed site or is carried with the patrol.

f. **Eating.** Men take turns eating. No more than half of the men should eat at a time, in order to have the other half alert and ready to fight.

g. **Water.** If details are sent to get water, guards must also be sent to protect them. No more than two trips to the source should be made in a 24-hour period.

h. **Rest.** Rest and sleep are permitted in special periods only after all work has been done. As in eating, men take turns resting. Security must be maintained.

i. **Planning.** Leaders should use the time spent in a patrol base to continue to plan and prepare for the mission.

j. **Departure.** All signs of the patrol's presence are removed or concealed. This may help keep the patrol's presence secret and prevent pursuit.

Section VII. Mounted Patrols

In the METT-T analysis, the factors of troops available, time, and the distance to be traveled have a major impact on the need for mounted patrols. Mounted patrols are especially useful in economy-of-force missions where the unit has a large sector to cover but few troops with which to operate. Mounted patrols can be used to patrol between units in the defense to cover gaps and to provide flank security and coordination; to patrol forward of units when operating without a covering force to provide early warning; to prevent or react to the

insertion of enemy troops behind friendly lines as part of a rear area protection plan; and to assist in reconnaissance where a large sector must be covered in a relative short time.

Since the mission for a mounted patrol is normally time and distance critical, security for the patrol is increasingly important and yet more difficult to accomplish. For this reason, a squad is not normally sent out to accomplish a mounted patrol since a single BFV cannot effectively secure its own movement. Two squads, or if available the entire platoon, are better suited for mounted patrolling.

7-33. Organization and preparation.

a. Depending on the mission (combat or reconnaissance) of a mounted patrol, the elements, planning considerations, control measures, and techniques for the patrol as previously discussed remain the same. The leader of the patrol must analyze the mission, determine what elements are needed, and decide the appropriate technique to apply to accomplish the mission.

b. As the patrol leader coordinates, using his checklist, he must keep in mind that the mounted aspect of his operation will affect route selection, linkup procedures, resupply, signal plan, departure and reentry of friendly lines, and other units in the area. Since the speed of execution will be significantly increased, recognition signals must be firmly established to provide early and immediate identification by friendly forces.

c. Frequently, the area of operation will be relatively extensive. The map, ground, or areial reconnaissance conducted by the leader must take into account the size of the area and the time constraints of the mission, and compare them with the security requirements for the mounted patrol. It is sometimes helpful for the leader to section off the area to be traversed into the separate major cross compartments offered by the terrain. Once these cross compartments have been identified, the leader can determine the security measures that must be taken before entering each compartment and select the route to address the terrain in the most advantageous manner. In short, the leader must know the terrain.

7-34. Fundamentals of movement.

a. Inherent in all mounted patrol operations is the command and control of movement. Good shooting and reconnaissance counts only after units have moved to critical points on the battlefield

where they can see and kill. Communications and maintenance are vital because they support movement.

b. Competent navigation and aggressive leadership are vital ingredients to movement. Movement techniques (Chapter 4) must be understood at all levels of command. An important requirement for a mounted patrol is for the patrol to see the enemy first and see him farther away than the friendly unit can be seen. To do this, the patrol must avoid being seen; if it is seen, it must avoid being hit; if hit, it must avoid being killed.

c. Once the enemy is sighted or encountered, it is necessary to move to accomplish whatever the task may be (reconnaissance, security, or attack).

d. While moving, a patrol must use the terrain for protection. The leader should review the fundamentals of terrain driving (Chapter 4) and maximize the use of cover and concealment. Despite their obvious advantages, applying these techniques will reduce speed and increase control problems. Additionally, the possibility of being ambushed by enemy infantry is increased. In most situations, these limitations must be accepted because the accuracy and lethality of long-range weapons have made exposed movement unacceptable. However, the leader must weigh the degree of security allowable against the required speed of execution and accept the risk, but attempt to minimize it.

e. A mounted patrol should never enter a major cross compartment without first establishing security and visually inspecting the area. Mounted patrols should make maximum use of dominating overwatch positions that offer good observation and fields of fire into the cross compartment. Elements occupying overwatch positions must:

   (1) Visually check the security of the position and be prepared to dismount to secure the area.

   (2) Occupy hull-down positions. This may be accomplished in phases. As the vehicle approaches the position, the observer in the commander's hatch should be standing and prepared to observe over the crest of the hill since his vantage point is the highest on the vehicle. If no threat is immediately seen, the vehicle can move forward until the main weapon system can cover the area. If the enemy is seen and the mounted patrol is on a combat mission, the vehicle should back down and move immediately to a hull-down firing position at another location on the overwatch position from which to engage the enemy. This is done to prevent the enemy from

engaging first since he may have seen the observer during the initial occupation.

(3) Be assigned areas for observation and fire by the element leader.

(4) Orient all weapons on likely or suspected enemy positions. Depending on the leader's initial assessment of the threat, this may be 25-mm guns or TOWs, or a mixture of both. If ITVs are attached, they should always be in the overwatch mode.

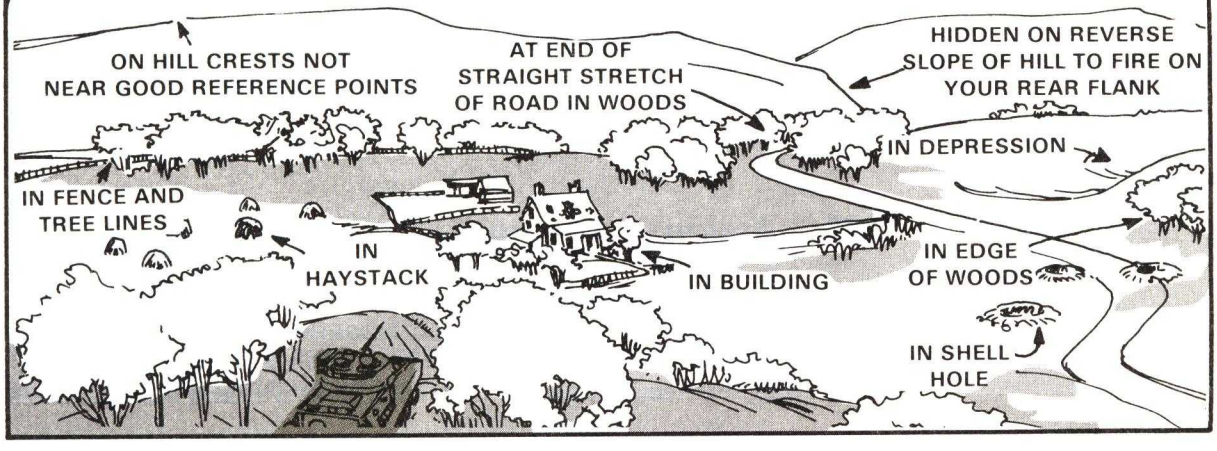
(5) Search for targets.

(6) Be alert for enemy activity. Overwatch elements do not concentrate on movement of bounding elements.

INITIAL OBSERVATION FROM OVERWATCH POSITION

	WHAT TO LOOK AND LISTEN FOR	WHERE TO LOOK
TANKS	■ Engine noise, truck clatter. Exhaust smoke. ■ Dust and shine. Firing signature (flash, blast, etc.).	■ 0-2,000 meters. Near crest, next to buildings, in tree lines.
ATGMs	■ Smoke trail of missile in flight. ■ Missile controller may be up to 100 meters from launch site.	■ 400-4,000 meters. May be launched from behind crest.
OTHER AT WEAPONS	■ Usually well camouflaged. ■ Firing signature. ■ Hand-held and crew-served weapons systems.	■ 360-degree observation to protect against tank ambush teams using hand-held weapons. ■ May be employed on reverse slopes in pairs or more, and protected by mines. ■ 0-1,000 meters. Usually on flank.

LOCATIONS TO LOOK


ON HILL CRESTS NOT NEAR GOOD REFERENCE POINTS
AT END OF STRAIGHT STRETCH OF ROAD IN WOODS
HIDDEN ON REVERSE SLOPE OF HILL TO FIRE ON YOUR REAR FLANK
IN DEPRESSION
IN FENCE AND TREE LINES
IN HAYSTACK
IN BUILDING
IN EDGE OF WOODS
IN SHELL HOLE

f. Before bounding to the next position, the element leader must consider:

(1) Where is the next position?

(a) Where is the position on the next bound?

(b) Where is the alternate position?

(c) If the position is unsuitable on arrival, where to go next?

(2) What is the best route?

(a) What is the route from here to the next position?

(b) Is there low ground, hedges, trees, and scrubs to be used?

(c) Is there an alternate route?

(3) Where is the enemy?

(a) Where would the enemy hide in order to observe, fire, and escape?

(b) During the move, what likely enemy positions should be given special attention?

(c) What is the enemy's most likely withdrawal route?

(4) What to do if fired on?

(a) What cover is available on the route?

(b) Is the unit prepared to return fire immediately?

(c) Are patrol members briefed on the actions expected of them?

(d) Who is covering the move; how can they help?

(e) Will smoke help; who will deliver it?

7-35. Actions on contact.

If the enemy does not detect the initial contact, the mounted patrol, depending on the mission, normally continues observation by stealth until detected. Further development of the situation requiring combat action, and the need for speed, may dictate sacrificing stealth. Once

contact is made during a reconnaissance or security patrol, the mounted patrol executes the following actions:

a. **Deploy and report.** If first contact results in an exchange of fire, overwatch elements lay down a heavy volume of direct suppressive fire and request indirect fires and smoke, as necessary. The bounding element (normally the first to be engaged) employs on-board smoke and returns fire while seeking cover. This deployment must be rapidly executed and is based on battle drills. The patrol leader immediately reports the enemy contact to the commander.

b. **Develop the situation.** The patrol aggressively seeks to determine the location, strength, composition, and disposition of the enemy forces encountered. This may be done mounted or dismounted, depending on time and the terrain available. The platoon immediately establishes a heavy volume of fire with the leader designating sectors of fire for the vehicles. While employing indirect fires, the leader directs the platoon, mounted or dismounted, to continue firing and moving to advantageous positions toward the objective until the enemy has disclosed his composition, size, and intentions.

c. **Choose a course of action.** The leader chooses a course of action that will take care of the immediate situation as well as assist him in the assigned mission. The course of action must be chosen as quickly as the contact will permit.

d. **Recommend a course of action.** The leader makes a complete report to his superior. This report includes the enemy situation as it has been developed and the course of action the leader intends to adopt which may be to conduct a hasty attack, a bypass, or a hasty defense. Again the course of action must be favorable to the assigned mission for the patrol.

7-36. The mounted patrol in rear protection operations.

The mounted patrol may be used in any one of several missions as part of the rear area protection plan.

a. **Protection of lines of communication.** The mounted patrol may perform this mission by placing mutually supporting OPs along a route, by conducting mounted patrols over the route, and by escorting noncombat elements using the route.

b. **Denial of a drop or landing zone.** The mounted patrol may be sent out to mine or booby-trap potential drop or landing zones or to observe them for a specified time.

c. **Protection of a specific site or installation.** This can be achieved by positioning static elements and by aggressive mounted patrols.

d. **Provide a reaction force.** The area in which the patrol is operating should be carefully delineated and subdivided into sectors. These sectors are identified by a letter, number, or name for rapid identification and report of the area of enemy intrusion. The leader must reconnoiter the routes in the area, know the terrain, and develop a plan for reaction to enemy intrusion. The infantry platoon may be operating with scout platoons in accomplishing this or any of the other missions in rear area protection.

7-37. Departure and reentry of friendly lines.

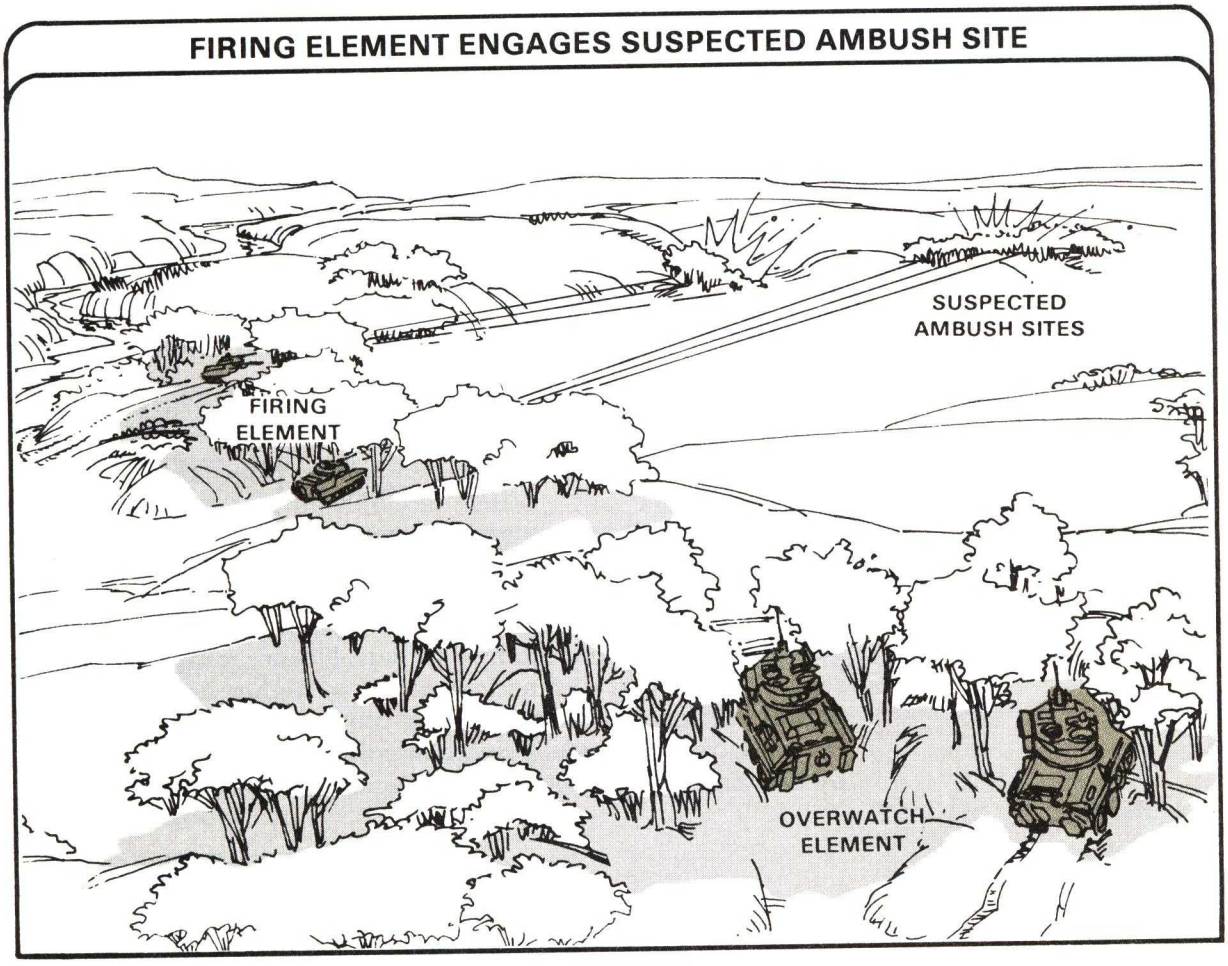
a. Given the speed of execution for mounted patrols, timings for departure and reentry of friendly lines and the use of the initial and reentry rally points and recognition signals are especially critical. The use of vehicles will significantly increase the size of rally points needed. Once the movement has begun, it is important to continue the move smoothly during passage to prevent the massing of vehicles at the passage point. Since the speed of the mission promotes confusion and can cause mistakes during passage, recognition signals, whether panels or smoke during daylight or colored, filtered lights at night, must be established for both the stationary unit and the patrol.

b. To avoid failure at the passage point, leaders must review information on departure from friendly lines and reentry of friendly lines with the added consideration of being mounted.

7-38. Reconnaissance by fire.

a. Reconnaissance by fire on a suspected enemy position seeks to cause the enemy to react and thereby give away his position. The technique is used when time is critical or the terrain does not favor the employment of dismounted troops. Normally, a mounted patrol will be told whether the conditions of the mission allow for reconnaissance by fire. It is performed at the risk of losing surprise, but it may lessen the probability of moving unaware into a well-concealed enemy position or fire pocket.

b. During reconnaissance by fire, the platoon employs a fire element and an overwatch element. The overwatch element must continuously observe with binoculars the positions being reconnoitered, those being fired on, and the adjacent areas so that any enemy movement or return fire is definitely located.



c. Reconnaissance by fire can be accomplished by either direct or indirect fire weapons.

RECONNAISSANCE BY DIRECT FIRE AND INDIRECT FIRE

	ADVANTAGES	DISADVANTAGES
DIRECT FIRE	■ Rapid response. ■ Accuracy. ■ Minimum communications required. ■ Fires can be delivered from different directions.	■ Sacrifices stealth and discloses friendly position. ■ Low volume of fire may telegraph intention. ■ Observation capability reduced. ■ Limited by the availability of ammunition and the maximum effective range of direct fire weapons.
INDIRECT FIRE	■ Security for the mounted patrol, which is directing the fire and observing for enemy action. ■ Permits all members of the patrol to observe the effects of the fire. ■ Not restricted by masking. ■ Wider variety of ammunition available for the mission.	■ Slower to deliver initial round. ■ Requires adjustment for accuracy. ■ Increased communications required. ■ Impacts on mortar/artillery supply rate. ■ Will seldom cause the enemy to fire but may result in movement.

d. If the enemy returns fire, the patrol deploys and fires in an attempt to make the enemy commit himself to action that will show his composition, size, and intent. The patrol leader must immediately report the contact and actions taken to higher headquarters to obtain guidance to further develop the situation. If the fire is not returned, the unit carefully reconnoiters the position; reconnaissance by fire may fail to cause seasoned enemy troops to react.

CHAPTER 8

Combat Support and Combat Service Support

The mechanized infantry platoon as part of the company team may be supported by nonorganic elements which provide indirect and direct fire support, military intelligence, and mobility assistance. For fire support, the mechanized infantry platoon is mainly concerned with the supporting fires of mortars, field artillery, TOWs, tanks, and, to a lesser degree, attack helicopters and close air support. Other support is provided by engineer, ground surveillance radar, and air defense elements. The team or higher level commander coordinates most of the combat support.

Section I. Combat Support

Combat support generally encompasses direct and indirect fires, air support, air defense artillery, military intelligence, and combat engineers.

8-1. Indirect fire support.

Normally, the most immediate support available to the mechanized infantry platoon is mortar and artillery fire. The battalion organic mortar platoon has six mortars. They may be fired as a platoon, or by section with three mortars per section. Artillery fire is provided by the brigade 155-mm howitzer battalion that is in direct support of the brigade. Normally, the brigade allocates a priority of fire to a maneuver battalion. Each maneuver battalion then establishes fire support

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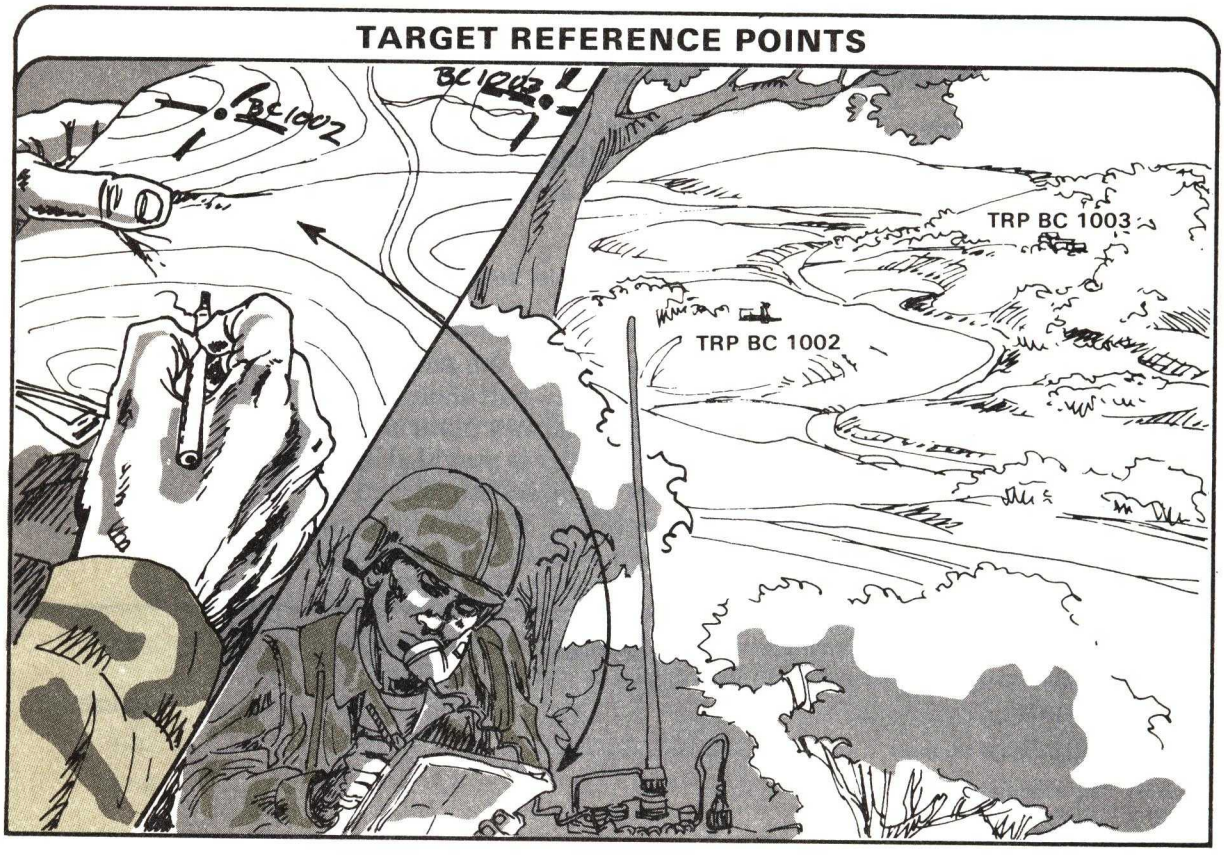
priorities for its company teams. Priority of fires is necessary because fire support is limited.

a. **Planning indirect fire.** Each company team has a fire support team attached to it. The FIST helps the company commander plan, call for, and adjust indirect fire. Normally, a platoon will have a forward observer party supporting it. This party helps the platoon leader plan and use his supporting fires. The forward observer party moves with the platoon leader, calls for and adjusts fires, and helps in planning and coordinating direct and indirect fires.

(1) The fire plan should include fire on known, suspected, or likely enemy positions and on prominent terrain features. A planned target can also be a reference point for quickly adjusting fire on targets of opportunity. Except for specific point targets, it is not necessary to plot targets close together; close plotting complicates the fire plan. Targets planned for direct fire from such weapons as machine guns, Dragons, tanks, and TOWs are designated as target reference points. Targets are numbered and recorded by the FSO just like other targets.



(2) In the offense, to keep the enemy from reinforcing and to protect the unit from counterattack, the platoon leader and FO plan targets on the approaches short of the objective, on the objective, and beyond and to the flanks of the objective.

(3) In the defense, withdrawal, or delay, the platoon leader and FO plan targets on enemy avenues of approach, on obstacles, and on, behind, and to the flanks of friendly positions. Also, final protective fire is planned where it will break up enemy assaults on friendly positions.

(4) The platoon leader and FO ensure that their fire planning is provided to the company FSO. Duplication of fires between platoons and the company is resolved by the FSO. All targets are assigned a number.

(5) Mortars can be used to:

(a) Destroy infantry in the open, infantry and key weapons in positions without overhead cover (by using VT fuzes), and infantry and key weapons in positions with light overhead cover (using delay fuzes).

(b) Suppress enemy positions and armored vehicles.

(c) Shoot white phosphorus (WP) to destroy enemy positions or to hide (screen) the platoon or to provide illuminiation.

(d) Hit enemy on reverse slopes and in gullies, ditches, built-up areas, and defilade areas.

(e) Provide continuous battlefield illumination.

(f) Provide smoke screens.

(6) Field artillery can provide indirect fires to suppress, neutralize, or destroy enemy targets. In addition to the same capabilities as mortars mentioned above, field artillery, because of its mass fire, can:

(a) Destroy enemy in field fortifications.

(b) Damage or destroy armored vehicles.

(c) Damage tanks.

(7) The communication system used by the FO to call for fire depends on the number of fire direction (FD) nets available and the degree of control desired by the company and battalion commanders. Generally, there are three FD nets. One is a company FD net on which the FO and the FSO operate. A second is a mortar platoon FD net (possibly two if operating as a split section) on which the mortar platoon fire direction center (FDC) operates, and a third is an artillery FD net on which the artillery unit's FDC operates.

(8) FD nets are assigned in coordination with the battalion fire support officer. Platoon FOs may be linked to the FSO on the company FD net. The FSO then takes FO calls for fire and directs them to the mortar or artillery net. The FSO may allow the FOs to work on the mortar net or the artillery net or both. The FSO monitors their calls for fire, acts as the net control station, and interrupts them only when the company commander has a priority mission.

(9) If an FO party is not available, the platoon leader may call for and adjust fire. He will normally initiate his call for fire support over the company command net, which the FIST chief monitors. The platoon leader will receive instructions by the company commander or FIST as to which fire direction net to use.

b. **Call for fire.** The initial call for fire consists of three basic transmissions.

(1) **Observer identification and warning order.** The observer identification tells the FDC who is calling. It also clears the net for rest of the call. The warning order tells the FDC the type of mission and the method of locating the target. The types of missions are:

(a) **Adjust fire.** This type of mission is used when the observer is uncertain of the exact target location. The observer says, "ADJUST FIRE."

(b) **Fire for effect.** The observer should always try first-round fire for effect. But, he should only use a first-round fire for effect if he is sure that his target location is correct. He should also be sure that the rounds of the first volley will have the desired effect on

the target so that little or no adjustment will be required. The observer says, "FIRE FOR EFFECT."

(c) **Suppress.** This is used to quickly bring fire on a target. The observer says, "SUPPRESS" (followed by the target identification).

(d) **Immediate suppression.** This is used to quickly bring fire on a planned target or target of opportunity that is firing at a friendly unit or aircraft. The observer says, "IMMEDIATE SUPPRESSION" (followed by the target identification).

(2) **Target location.** This part of the warning order prepares the FDC for receiving and applying the data sent by the observer to locate the target. The three methods for locating targets are grid, polar, and shift from a known point.

(a) If the target is known and has a target number, transmitting the target number is enough to locate the target for the FDC. When using the grid method, the target location is sent in six- or eight-digit grid coordinates. When the polar method is used, the FDC must first know the observer's location (eight-digit grid), and the observer locates the target by transmitting the range in meters and direction in mils. When using the shift method, the target is located by reference to a known point (previously established target) and directing a left or right shift in meters, and an add or drop, that will bring fire on the new target. The observer must also send the direction to the target. The above information is sufficient for the FDC to plot the initial round. The other parts of the call for fire are necessary to attack the target with the right ammunition, fuze, and troop safety in mind.

(b) If adjustment is required, the observer must send the FDC his direction to the target in mils.

(3) **Description of target, method of engagement, and method of fire and control.**

(a) In the "Description of Target" part of the call for fire, the observer describes the target to the FDC. The FDC then determines the type and amount of ammunition needed.

The target description should be brief yet accurate.

TARGET DESCRIPTION

(EXAMPLES)

WHAT THE TARGET IS:	Tanks and dismounted infantry, or truck convoy, or artillery battery.
WHAT THE TARGET IS DOING:	Attacking, or digging in, or moving on Route 45, or firing.
STRENGTH OF THE TARGET:	Company of infantry with 10 tanks, or 20 trucks, or 6 guns.
DEGREE OF PROTECTION:	In open, or dug in, or in bunkers with overhead cover.
TARGET SHAPE AND SIZE:	Generally used for linear (trenchlines or roads), circular (assembly areas or strongpoints), or rectangular targets. Example:

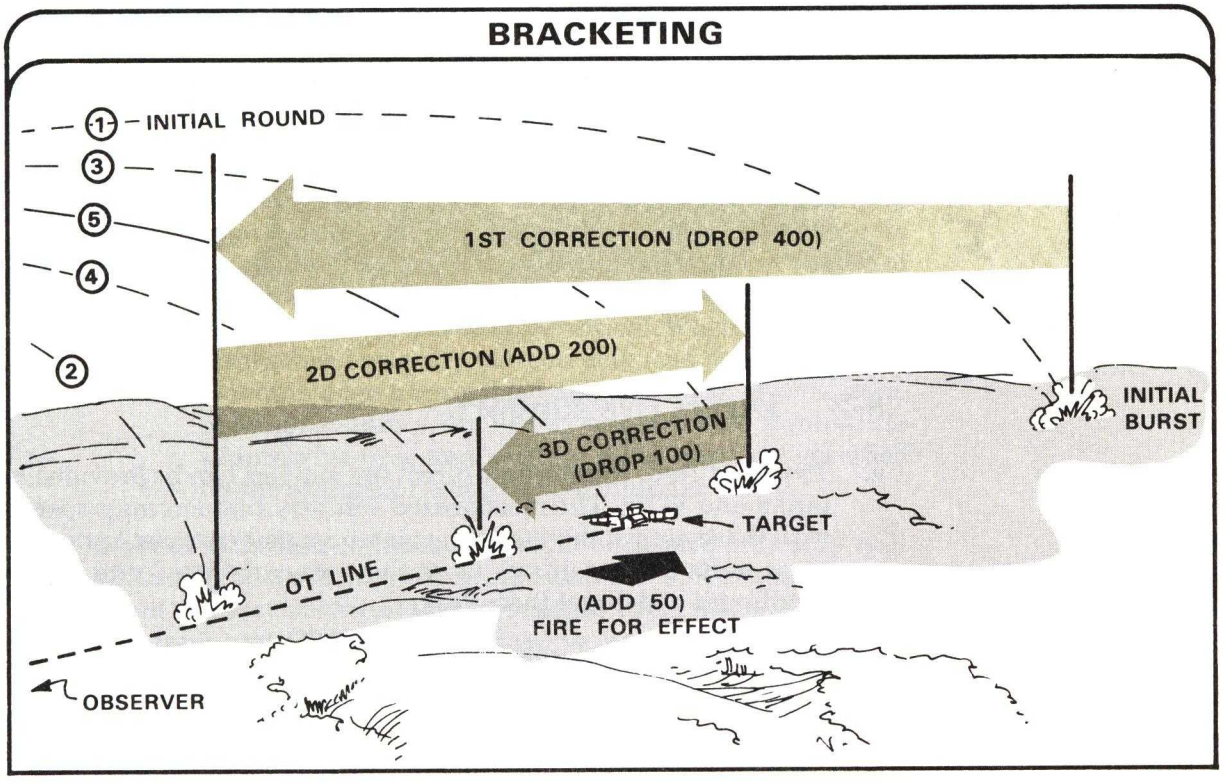
SHAPE	SIZE
Linear	Grid 186278, Length 800 meters, Attitude 2150 (azimuth of target's long axis). or Grid 186278 to 192284.
Circular	Radius 200.
Rectangular	400 by 200, Attitude 3450 (azimuth of target's long axis).

(b) In the "Method of Engagement" part of the call for fire, the observer tells how he wants to attack the target (type of ammunition, fuze, nearness to friendly troops). Ammunition Type and fuze may be altered by the FDC based on ammunition constraints. It is here that the observer would announce "DANGER CLOSE" if proximity of the target to friendly troops is 400 meters or less for mortars and 600 meters or less for 155-mm artillery. When "DANGER CLOSE" is called, the initial rounds in adjustment should be delay fuze.

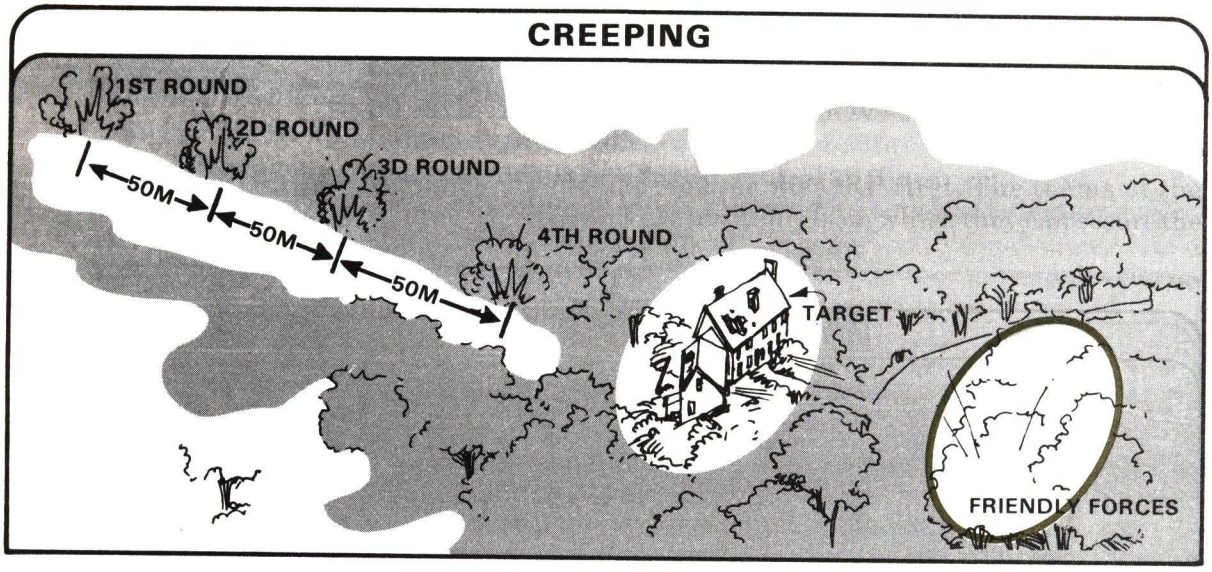
(c) In the "Method of Fire and Control" part of the call for fire, the observer states who will give the command for fire to begin. If the observer wants to control the time of firing, he will say, "AT MY COMMAND." The FDC will tell the observer when the unit is ready to fire. At the proper time, the observer will say, "FIRE." If the observer does not say "AT MY COMMAND," the FDC will fire as soon as the platoon/battery is ready.

c. **Adjusting indirect fire.** Once the call for fire has been made, the observer's next concern is to get fire on the target. If he can accurately locate a target, he will request "FIRE FOR EFFECT" in his call for fire. If for any reason (deceptive terrain, lack of identifiable terrain features, poor visibility, or an inaccurate map) the observer cannot accurately locate the target, he must adjust fire onto the target. Usually, one artillery piece or mortar is used to adjust fires.

(1) The observer normally uses the bracketing method of adjustment. An initial round is fired, and then the observer attempts to get one round to burst long or short of the target opposite the initial round. By alternating rounds and decreasing distances by half in each adjustment, the target is rapidly bracketed and brought under accurate fire.



(2) The creeping method of adjustment is used in "DANGER CLOSE" situations. Here, the initial round is fired beyond the target. Adjusting rounds are brought in 100 meters or less until the target is engaged. This method is slow. It also tends to use more ammunition; therefore, it should be used only when soldier safety is a major concern. (For a further discussion of adjusting mortar and artillery fire, see FM 6-30.)



8-2. Direct fire support.

a. **Types of fire.** Nonorganic direct fire support can be provided by tanks and ITVs. The mechanized infantry platoon may operate with these assets; therefore, the platoon members must know how these units are organized, what they are capable of, and how to coordinate and direct their fires.

(1) **Tank units.** Cross attachment of tank and mechanized infantry companies and platoons is the basic method of organizing a combined arms team. The tank platoon consists of four M60 or M1 series tanks. Normally, the tank platoon is used as a unit so that tank sections can provide mutual support. Although tank platoons are used as a unit, the requirement remains to tie in fires, coordinate fire control measures, avoid target overkill, and make best use of weapon systems. Initial coordination is made between platoon leaders during the issuance of orders. Final coordination is made on the ground between platoon/squad leaders.

(2) **Antiarmor units.** A platoon of ITVs (four TOWs and the platoon leader's APC) from the antiarmor company may be working with or near the company team. When working with the company team, the ITV platoon may be attached to the company or under its operational control (OPCON).

(a) When an antiarmor platoon is attached or is under OPCON, the antiarmor platoon leader becomes part of the company team and should be present for the issuance of operation orders.

(b) Antiarmor platoons and sections supporting the battalion and controlled by the antiarmor company commander may be deployed near mechanized infantry elements. In this situation, initial coordination is done by company commanders. Detailed coordination is made with elements on the ground between squad and platoon leaders to tie in fires, coordinate fire control and distribution measures, avoid target overkill, and make the best use of the TOW, Dragon, and other infantry weapon systems.

(c) Since the antiarmor company can be employed as a maneuver element, mechanized infantry platoons may be attached to the antiarmor company to strengthen its combat and security capabilities. This makes the job of platoon/squad leaders in coordinating fires of various weapons systems even more critical. When attached, the mechanized infantry platoon may lead during mounted moves in open terrain, lead dismounted in close terrain, provide security for ITVs, and provide immediate suppressive fires and perform other missions specified by the antiarmor company commander.

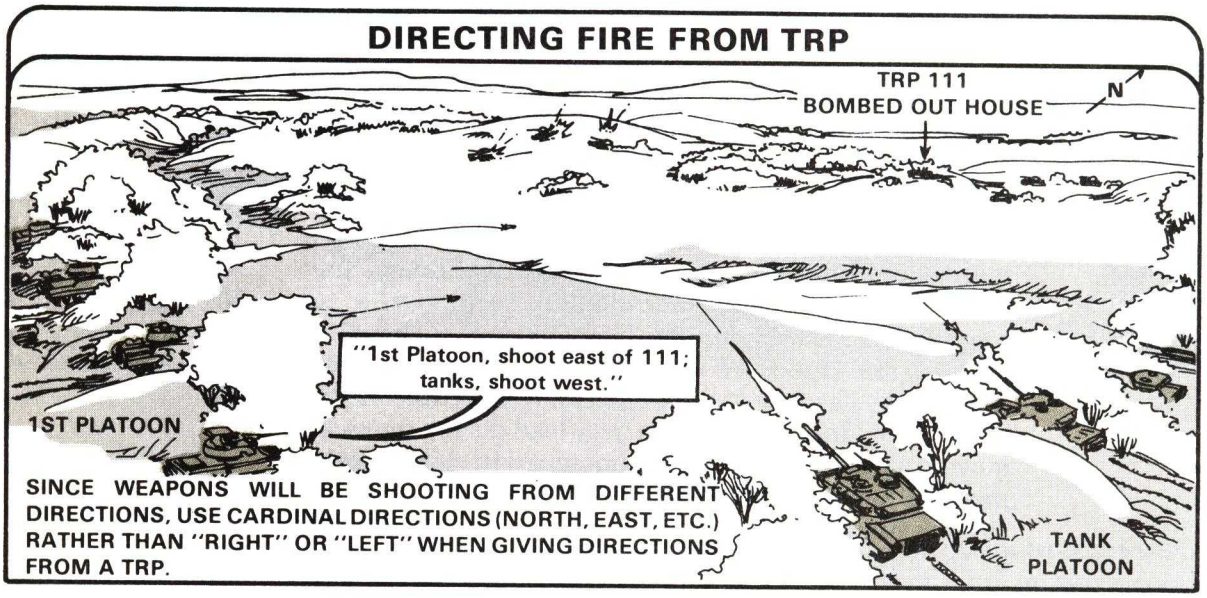
b. **Controlling direct fires.** Since mechanized infantry will habitually be working with tanks and ITVs, leaders must be trained to direct the fire of these weapons. There will also be times when tank and ITV crews will need to direct infantry fire. The procedures described below work in both cases. The objective is to quickly identify the target so that weapon crews can rapidly acquire and engage it.

(1) Fires can be directed by radio, wire, or face to face. Face-to-face communication is preferred, but the method used will be determined by the company commander's guidance and unit SOP. Fire direction by radio is over the company command net or the platoon internal net. Wire can be used when the unit is static. When infantry is dismounted and moving with tanks, the M60 tank has an external telephone

which may be used to direct fire. The M1 Abrams tank does not have an external telephone.

(2) Prearranged fire control/coordination measures established at the beginning of an operation provide the platoon its sector of fire, engagement areas, and priority of targets. These measures are the parameters within which platoons can fire.

(3) The use of target reference points and other visible terrain features is an excellent way to direct fire. If the infantryman is close to the vehicle, he can direct fire right or left, up or down, from a reference point. If there is any doubt about right or left, a cardinal direction may be used.


DIRECTING FIRE FROM TRP
TRP 111
BOMBED OUT HOUSE
N
"1st Platoon, shoot east of 111; tanks, shoot west."
1ST PLATOON
TANK PLATOON
SINCE WEAPONS WILL BE SHOOTING FROM DIFFERENT DIRECTIONS, USE CARDINAL DIRECTIONS (NORTH, EAST, ETC.) RATHER THAN "RIGHT" OR "LEFT" WHEN GIVING DIRECTIONS FROM A TRP.

(4) If reference points are not used, the gun barrel or launch tube (if visible) can be used as a baseline from which direction can be given — for example, "FROM THE TUBE, HALF LEFT, 1,300 METERS."

(5) Leaders can direct fire to the target by giving the general target area and then fire tracers at the target. To do this, they will describe the general target area in relation to where the weapon system is located — for example, "TO THE FRONT, WATCH MY TRACERS."

(6) To focus on a target, the leader may narrow the area which the gunner must search by describing the target — for example, "BMP, 600 METERS NORTHEAST OF BRIDGE."

(7) If the gunner fails to identify the target or calls the wrong one, corrections are given based on the impact of the first round, or another description is given — for example, "FROM THAT ROUND, RIGHT 200, ADD 100"; or "TANK, FROM THE POND 600 METERS EAST."

8-3. Air support.

a. **Attack helicopters.** The attack helicopter is mainly an antiarmor weapon. Attack helicopter units are maneuver units and are normally not attached to, or operationally controlled by, units below brigade or battalion level. They do, however, support the company team in both offensive and defensive operations. Aeroscouts usually arrive ahead of attack aircraft. They establish communication with ground forces and get the situation and mission from the commander on the ground. The aeroscouts identify targets, choose attack positions, and control attack helicopter fire. When aeroscouts are not available or cannot see the enemy, attack helicopter assets will need to get some targeting information from the ground commander. The ground commander may also be required to direct attack helicopter fires.

b. **Close air support.** The United States Air Force (USAF) provides close air support. CAS strikes can be either preplanned (by battalion) or requested on an immediate-need basis. Such assets are best used as an antiarmor weapon against large enemy formations. Forward air controllers (FAC), whether on the ground or in the air, act as a link between the supported unit and the CAS attacking aircraft. Although the company team commander can provide input into the planning process, CAS planning normally begins at battalion level.

c. **Marking friendly positions.** Friendly positions should always be marked during close air strikes, but they must not be compromised to enemy observers. As a rule, a marker is usually necessary when friendly troops are closer than 300 meters to the target.

(1) The smoke grenade is the most commonly used marker, but it has limitations. Some colors can blend with the background. (Red or white is good with most backgrounds.) Wind may cause smoke to drift above trees.

(2) Flares (hand rocket or 40-mm) are good attention getters at night and sometimes are usable during the day.

(3) Signal mirrors are probably the best ground-to-air attention devices, if there is sunshine and if the operator is proficient. A pilot can see a mirror flash many miles away. Signal panels (VS-17) are good visual references.

(4) Strobe lights are pocket-sized, battery-powered signal lights that produce brilliant white flashes at about one-and-a-half-second intervals. The flash is visible at night for 1 to 3 miles.

(5) Vehicle lights, such as an unshielded red taillight, are visible to a pilot at night for several miles.

(6) Chemical glow lights can be used to mark friendly positions at night.

d. **Target location.** When the FAC knows where all friendly units are and where the target is, he will tell the USAF fighter which attack heading he should use. But, if the FAC cannot see these elements, the unit will have to make the attack decision. It must be remembered that FIGHTERS SHOULD NOT ATTACK OVER FRIENDLY POSITIONS. If a FAC is not available, the company fire support officer or the platoon forward observer can direct attacking aircraft to the target. The platoon leader may be required to locate targets, identify them, and direct the fire to targets by use of a reference point.

(1) Smoke rounds from mortars, artillery, and grenade launchers are the principal target marks. White phosphorus is usually best, because the smoke cloud blossoms quickly and is highly visible.

(2) Geographical landmarks or terrain features clearly visible from the air can help in target identification. References to streams, roads, bridges, tree lines, cultivated areas, and prominent hills help narrow the area the pilot has to search.

(3) Friendly positions, when clearly recognizable from the air, may be used as day or night reference points for locating close-in targets.

(4) Ordinance already impacting on the ground may be, or may create, an adequate reference point.

(5) Illumination rounds make good reference points. They can guide strike aircraft to the target vicinity at night.

(6) Tracer fire can be used to mark a target at night. The target can be marked as being at the intersection of two streams of tracers, or at the impact point of a single stream.

(7) Grass fires or other fires near a target may sometimes be used as night reference points.

8-4. Air defense artillery.

a. The mechanized infantry battalion may be supported by a Vulcan/Chaparral platoon or man-portable air defense system (MANPADS) team from the divisional air defense battalion. The battalion commander decides whether to keep the air defense elements in general support of the battalion or to place them in support of specific company teams. These assets require security, but it is not normally an assigned mission or task for an infantry unit. Air defense assets achieve some security by their very presence in friendly troop areas.

b. Air defense artillery (ADA) fires are controlled using orders and procedures that have been established by higher headquarters. MANPADS/Vulcan/Chaparral leaders are responsible for deciding whether an aircraft is hostile. Engagement of aircraft is governed by the following weapons control status titles:

(1) **"Weapons free."** Weapons may fire at aircraft not positively identified as friendly.

(2) **"Weapons tight."** Weapons may be fired only at aircraft positively identified as hostile according to announced hostile criteria.

(3) **"Weapons hold."** Do not fire except in self-defense.

c. Because of the signatures of the weapon systems, coordination between leaders should ensure that the firing of ADA weapons does not disclose friendly ground positions. (For air defense techniques, see Appendix F.)

8-5. Military intelligence.

Information-gathering elements from the military intelligence (MI) battalion may be attached down to battalion level. These elements normally consist of ground surveillance radar (GSR) teams and remote sensor teams. Because GSR teams require a line of sight to their observed area, they will most frequently be well forward and close to friendly troops. As with ADA elements, GSR elements gain security by working in areas occupied by friendly troops. Leaders should

coordinate their security activities, and they should also coordinate their efforts to gain information of immediate importance to the platoon or company team.

8-6. Combat engineers.

a. Brigade and battalion commanders decide how best to use the engineer company/platoon. They may use it as a unit or attach all or part of it to their subordinate elements. In fast-moving offensive operations, the tendency is to attach engineers to lead company teams. In the defense, engineer units are normally placed in direct support.

b. Combat engineers assist the mechanized infantry in mobility, countermobility, and survivability.

(1) Mobility tasks for engineers include:

(a) Filling craters and ditches.

(b) Removing roadblocks, trees, rubble.

(c) Preparing entrances and exits for fording sites and river crossings, and marking minefield breach lanes.

(d) Preparing and maintaining combat routes.

(2) Countermobility tasks for engineers include:

(a) Constructing antiarmor obstacles.

(b) Demolish fords, bridge bypasses, and bridges.

(c) Digging tank ditches.

(d) Installing mines and minefields.

(3) Survivability tasks for engineers include:

(a) Digging hull-down positions for ITVs, BFVs, and tanks.

(b) Preparing protective shelters for command and control.

(c) Constructing earth berms for protection.

c. When combat engineers are supporting the company team, the element may be a squad or larger unit. The mechanized engineer squad is equipped with an APC which carries the squad's basic load of equipment and demolitions. The squad's limited capabilities can be enhanced by assigning it equipment from the engineer platoon/company headquarters elements. The engineer squad will assist the infantry in preparation of obstacles or positions.

This assistance may be in the form of technical advisors or engineer personnel accomplishing work beyond the capability of the infantry unit. Engineers must be used where their expertise and equipment are needed most.

Section II. Combat Service Support

Combat service support for mechanized infantry platoons consists mainly of maintenance, supply, personnel, and medical services required to sustain their fighting capability. Most of this support comes from the company and battalion. The platoon leader is responsible for coordinating the platoon's combat service support effort. The platoon sergeant and squad leaders supervise the performance of most of the combat service support tasks in the platoon.

At platoon level, combat service support tasks include:

- Ensuring that all equipment authorized by the table(s) of organization and equipment (TOE) is on hand, accounted for, and safeguarded.
- Maintaining prescribed levels of ammunition; petroleum, oils, and lubricants (POL); and rations.
- Requesting resupply of spent, lost, damaged, or destroyed items.
- Maintaining all equipment, weapons, and vehicles and recovery items needing repair.
- Taking care of the personal needs of soldiers in the platoon.

Normally, procedures for combat service support are specified by unit SOP. The SOP should spell out who the platoon leader contacts to get a service, an item, or technical help. In the company, this will usually be the company executive officer, first sergeant, supply sergeant, motor sergeant, or tactical communications chief. If these personnel cannot handle the request, they normally coordinate with battalion for the support.

8-7. Maintenance.

a. Proper maintenance is the key to keeping equipment and materiel in serviceable condition. It includes inspecting, testing, servicing, repairing, requisitioning, recovering, and evacuating. Repair and recovery are done as far forward as possible. When equipment cannot be repaired on site, it is moved to the rear, but only as far as necessary for repair.

b. A platoon leader is responsible for the maintenance of his vehicles. He must be able to perform preventive maintenance himself, know what to do when a maintenance problem arises, know how to inspect, and know how to train his operators. Cross-training is critical; the loss of one individual must not adversely affect the combat readiness of the squad or platoon.

c. The platoon leader's maintenance functions include training operators, inspecting, assigning tasks within the unit, and providing adequate time to perform required maintenance.

d. The platoon leader also supervises all maintenance periods, coordinates support that may be required from higher echelons, keeps the chain of command informed of major problem areas, and follows through on maintenance being performed outside the unit.

8-8. Organizational maintenance.

a. Organizational maintenance is the responsibility of the unit that is assigned the equipment. It is performed by operators and battalion mechanics.

b. Operator maintenance includes proper care, use, and operation by the operator and the fighting vehicle squad. The driver and other squad members perform daily services on the vehicle and on all other assigned equipment such as weapons, night vision devices, and nuclear, biological, and chemical (NBC) gear. These services include inspecting, servicing, tightening, minor lubricating, cleaning, preserving, and adjusting tools and equipment as prescribed by relevant technical manuals. The driver is required to record, on the Equipment Inspection and Maintenance Worksheet, DA Form 2404, all equipment faults he cannot correct or does correct by replacing a part. The driver and gunner reports are the main way to convey information about equipment faults to the platoon leader and to organizational maintenance personnel.

c. Preventive maintenance checks and services prescribed for the turret, automotive, and weapon systems are divided into three services or checks:

(1) Before operation.

(2) During operation.

(3) After operation, to include detailed daily service.

d. These services should be conducted as prescribed in the operator's manual.

e. The driver is not the only person who has maintenance responsibilities. Every member of the squad should be assigned tasks to aid in the maintenance of the vehicle. The gunner, for example, should be responsible for the weapon systems, maintain the DA Form 2408-4 (round count) on the 25-mm gun and TOW, and know when replacement of weapon parts, such as the 25-mm gun firing pin assembly (4,000 rounds) and barrel (13,000 rounds), are required. The driver is responsible for filling out DA Form 2404, automotive checks, and operation of the vehicle.

f. When the operator identifies a problem that is beyond his level of maintenance, the battalion maintenance platoon must be notified so the cause of the problem can be isolated and corrected. The battalion maintenance platoon has five company maintenance teams which establish support relationships with the companies. Company maintenance teams have trained mechanics who are authorized to do unit maintenance tasks as prescribed in the BFV technical manuals. Battalion maintenance personnel have test equipment that allows them to rapidly diagnose faults in the system. With BFV's provision for rapid modular replacement, many faults can be rapidly corrected and the vehicle returned to the platoon. If battalion maintenance is not authorized to make the repair, they will arrange to have it checked by direct support maintenance.

8-9. Direct support maintenance.

Direct support maintenance is performed by the forward support battalion that normally supports a brigade. It has repair and/or replacement parts, assemblies, and components. Contact teams from direct support units may be sent forward to make on-site repairs when possible.

8-10. Recovery.

a. Recovery is necessary to repair vehicles, or other items essential to mission accomplishment, that cannot be repaired on site, or to prevent capture or destruction by the enemy. Except for the BFV, most damaged equipment can be carried by the platoon until the platoon sergeant coordinates its evacuation.

b. When a vehicle has to be recovered, the platoon leader reports its location and the type and extent of damage or, if known, the repair

needed. As a minimum, the driver and gunner should remain with the vehicle to secure it and to aid the recovery. Normally, a recovery vehicle from the forward support battalion will evacuate the damaged vehicle.

8-11. Supply.

Generally, when the mechanized infantry platoon needs supplies, they are delivered by company or battalion combat service support elements. The platoon leader and platoon sergeant must plan to keep the platoon supplied. If the platoon leader lets ammunition and other critical supplies get too low before requesting resupply, the platoon may run out at a critical point in an operation. Resupply and refueling should be accomplished at every opportunity.

a. **Ammunition and missiles.** BFVs require many different types and quantities of ammunition and missiles. These can be rapidly expended. Squad leaders must control ammunition to use and keep the platoon leader or platoon sergeant informed on the amounts of ammunition and missiles remaining. This is necessary so accurate and timely requests for resupply can be submitted. Redistribution of ammunition after contact is critical to maintaining the fighting capability of the platoon.

   (1) Resupply of ammunition and missiles is based on a report of expenditures submitted to the company executive officer (XO) or first sergeant (1SG). Ammunition is sent forward from the battalion trains to release points. There, company personnel take charge and move the supply vehicles to platoon areas.

   (2) Wheeled vehicles, armored vehicles, and helicopters can be used for ammunition resupply. The platoon leader should know which type of transportation is to be used. This will affect his selection of location, security requirements, and time required to complete resupply. For example, if resupply is by helicopter, an adequate landing zone (LZ) must be selected to the rear of the position. It must be secured before the helicopter arrives. Resupply also can require added time because the ammunition might have to be hand-carried off the LZ to avoid exposing the fighting vehicles for prolonged periods.

   (3) When wheeled vehicles are to be used, the platoon leader must select a location that has routes leading to it suitable for wheeled vehicles.

   (4) If armored vehicles are to be used, it may be possible to resupply the platoon in position.

(5) There are several steps that should be taken by a BFV crew before being resupplied with ammunition. These include:

(a) Completely filling the ammunition cans (ready boxes) for the 25-mm gun and the 7.62-mm coaxial machine gun.

(b) Repositioning the remaining stowed ammunition to leave the easy-to-stow areas open. For example, if the 25-mm ammunition stowage space under the floor plates is empty, it should be filled with ammunition stowed on the sponsons.

(c) Loading remaining TOWs, if the launchers are empty.

(d) Filling all empty magazines for M16 rifles and the firing port weapons.

(e) Ensuring that adequate tools, such as wire cutters and crowbars, are readily available to open the ammunition boxes.

(f) Having a plan as to who provides security, how the ammunition is to be divided, and how the ammunition is to be unloaded and stowed. These actions may be prescribed in the SOP.

b. **Petroleum, oil, and lubricants.** Vehicle fuel tanks should be topped off any time the tactical situation allows. Normally, the platoon sergeant requests POL through the XO or 1SG. The request should tell them how much fuel is needed and where and when to refuel (six-digit grid coordinates).

(1) Generally, refueling is accomplished in one of two ways:

(a) Fuel is brought to the BFVs. This method is used when routes are available and refueling can be done not under direct observation and fire of the enemy. The fuel tanker will move to each vehicle position. The fuel tanker will park as close to the rear of the position as the terrain permits. Any BFV that cannot be reached by the fuel tanker's hose may have to be moved to be refueled. If this vehicle's dismount team is deployed, it should stay in position to provide security.

(b) The BFVs move to a centrally located refueling point. This method would be used if the platoon is in contact, and enemy fire makes it too dangerous for the fuel tanker to close on the position, or the terrain is too rough for the tanker to traverse. One or two BFVs at a time are moved to the refueling point. Because the refueling point may be as far as the next terrain feature to the rear, the

dismount teams, if deployed and not in contact, may remount and stay with their vehicles to provide security during refueling. If in contact, dismount teams remain deployed. If the platoon is required to move, the dismount teams crossload.

(2) The BFV has a 175-gallon fuel capacity. This gives it about a 300-mile cruising range. The platoon leader should keep this in mind when planning to refuel, because the amount of fuel required will directly affect vehicle refueling time. He also must be aware that the cruising range is an approximation, and that terrain and weather influence fuel consumption. It is important to top off fuel tanks whenever the tactical situation permits.

(3) When refueling time is limited, the platoon leader must choose between topping off the vehicles that need the most fuel and putting a limited amount in each vehicle. If the fuel tanker can move to the vehicle, it is best to put a limited amount in each vehicle. When the BFVs have to move to a central refueling point, the vehicles requiring the most fuel are moved first and topped off. The other vehicles are then topped off at the first opportunity.

(4) At times, the vehicles may have to topped off using 5-gallon cans. This is slow, so extra time should be allowed. The fastest way to refuel from cans is for each squad to set up a bucket brigade, passing the cans from the fuel-carrying vehicle to the BFV.

c. **Rations and water.** Each squad carries combat rations and water on its BFV. The vehicle has designated storage space for rations. If more rations are required, they can be stowed in the bustle rack or secured inside the vehicle. Other than the water carried by each soldier in his canteen, each BFV has a 5-gallon water container in the top right side of the troop compartment. When the situation allows, hot meals prepared by the headquarters company mess teams may be served to the platoon. Rations and water supplied to the platoon are normally based on its personnel strength. The platoon leader or platoon sergeant may submit special requests per unit SOP.

d. **Repair parts.** Repair parts are issued in response to specific requests or by direct exchange. The battalion maintenance platoon keeps each unit's prescribed load list (PLL). The company maintenance team carries the supported unit's PLL to expedite repairs. The company is authorized to keep on hand high demand repair parts for weapons and radios, based on a prescribed load list.

(1) A limited number of armament spare parts are stowed on the vehicle. Included is a barrel assembly with case and ruptured cartridge extractor for each M60 and M240C coaxial machine gun. There are also two bolt assemblies, two bolt cam pins, two retaining pins, and a maintenance equipment case for the M231 firing port weapons.

(2) There are two track blocks and a drift pin attached to the outside deck of the vehicle. A water barrier repair kit is provided. Two vehicle tool bags are in the engine compartment, and one gun tool bag is stowed in the driver's area. These tools are adequate to perform operator maintenance. A list of tools will be available in the vehicle's operator manual.

e. **Other supplies.** Each mechanized infantry platoon has a large amount of equipment, but it requires frequent resupply to accomplish its mission. Periodic checks by all leaders are required to ensure that all equipment is accounted for and ready for use. Low-use items, such as drain plugs, NBC equipment, and certain tools, can get lost or damaged easily. These low-use items should be checked often to ensure they are on hand and usable.

(1) Medical supplies are provided by the battalion medical platoon. The medic supporting the platoon assists the platoon sergeant and squad leaders in preparing a consolidated list of required medical supplies. These include not only the medical supplies needed by the medic, but those used by each soldier, such as first-aid dressings, water purification tablets, and foot powder. The platoon sergeant or the medic passes the list to the company evacuation team. This team takes the list to the battalion medical platoon where the medical supplies are provided.

(2) Tools, TA-50 equipment, batteries, and other expendables are obtained through the company supply sergeant.

(3) Normally, maps are supplied through the company XO or 1SG.

8-12. Personnel support and administration.

a. **Personnel strength.** It is crucial that the platoon leader/platoon sergeant submit accurate strength reports to ensure that critical personnel shortages, such as gunners, squad leaders, and assistant squad leaders, are replaced quickly, and with qualified persons. Submission of strength reports to the company XO or 1SG should be covered in the SOP.

b. **Services.** Services include awards and decorations, leaves and passes, command information, mail, religious activities, financial matters, legal assistance, welfare, rest and relaxation, and any other service related to the welfare and morale of the soldier. Many services are standard procedure, but the platoon leader has responsibility for ensuring that these services are available to his platoon, as required. Normally, they are requested through the first sergeant.

8-13. Medical support.

a. **Medical services.** The platoon normally has a medical aidman from the supporting battalion medical platoon. His job is to furnish emergency medical treatment, determine which casualties need to be evacuated, and prepare them for evacuation. He also advises the platoon leader on measures to help prevent sickness and injuries that could reduce the platoon's fighting ability. These include measures to prevent exposure to heat and cold, food poisoning, and bad water. Normally, the medical aidman rides in the platoon leader's vehicle.

b. **Medical evacuation.** The medical aidman should inform the platoon leader when there are casualties that need to be evacuated. The platoon leader decides when to evacuate casualties.

(1) Generally, when the platoon is in contact, casualties awaiting evacuation should be given protection from enemy fire until the fight is over.

(2) The decision to evacuate casualties with serious wounds must be based on the effect of such action on mission accomplishment, and the possibility additional casualties might result. Casualties should never be deserted.

(3) Weapons of casualties to be evacuated are handled according to unit SOP. PERSONAL EFFECTS FOUND ON THE BODY OF A DEAD SOLDIER ARE NEVER REMOVED. Any equipment or personal effects found after a soldier is evacuated should be inventoried and sent to the company supply sergeant.

(4) Casualties are either evacuated by the platoon or by the medical team supporting the company. This team is normally equipped with an armored ambulance for protection against enemy fire.

(a) **Platoon evacuation.** The BFV is the quickest and safest way to evacuate casualties. The casualties are

transported to the company aid post. If a company aid post has not been set up, or the situation does not permit use of a BFV, the platoon leader requests help from the company commander. The platoon aidman goes with the casualties if they require immediate care. The aidman fills out a DD Form 1380, US Field Medical Card, and attaches it to the casualty. This card stays with the casualty until evacuation is complete. The information on the card includes initial diagnosis and medication given.

(b) **Company evacuation.** When the company is to evacuate casualties, the casualties should be moved to a covered and concealed location to the rear of the platoon's position. This location must be reported to the company when the evacuation request is submitted. If enemy indirect fire presents a threat, the casualties are kept in a BFV and transferred to the ambulance when it arrives. When this is to be done, the platoon leader may send a couple of men or a dismount team to secure the location and make contact with the ambulance.

8-14. Prisoners of war and captured documents and equipment.

a. **Prisoners of war.** PWs are a good source of combat information. Troops must handle them without violating international law.

(1) PWs must be treated humanely. They must not be physically or mentally abused. The senior officer or NCO present is responsible for their care. If a platoon cannot evacuate a PW in a reasonable time, he must be given food, water, and first aid. He should not be given comfort items such as cigarettes and candy. Those PWs who receive favors and those who become mistreated are poor interrogation subjects. In handling PWs, use the five"S's":

(a) Search PWs as soon as you capture them. Take their weapons and papers, except identification papers. Give a written receipt for any personal property and documents taken. Tag documents and personal property so that you know which PW had them. Have one man guard while another searches. When searching, do not get between the PW and the guard. To search a PW, have him spread-eagle against a tree or wall, or on the ground in a pushup position with the knees on the ground. Search the PW and all his gear and clothing.

(b) Segregate PWs into groups of males and females and subgroups of officers, NCOs, enlisted soldiers, civilians, and political figures. This keeps the leaders from promoting escape efforts. Keep groups segregated as they move to the rear.

(c) Silence PWs. Do not let them talk to each other. This keeps them from planning escape and from cautioning each other on security. Report anything a PW says to you or tries to say to another PW.

(d) Speed PWs to the rear. Platoons turn PWs over to the company where they are assembled and moved to the rear for questioning by the S2.

(e) Safeguard PWs when you take them to the rear. Make sure they arrive safely. Watch out for escape attempts. Do not let them bunch up, spread too far out, or start diversions (fist fights, etc.) that create a chance for escape. At the same time, do not let anyone abuse them.

(2) If a PW is wounded and cannot be evacuated through normal channels, he should be treated by an aidman and evacuated through medical channels.

(3) Before evacuating a PW, he should be tagged with a captive and equipment/document tag, which may be duplicated locally (see STANAG 2044).

(4) The tag should be perforated into three parts and made of durable material. The tag should measure approximately 10 x 10 centimeters for each part. The tag should be pierced at top and bottom and reinforced for security to facilitate attachment.

b. **Captured documents and equipment.** Enemy documents and equipment are good sources of information. Documents may be official (maps, orders, records, photos) and personal (letters, diaries, pay records). If such items are not handled properly, the information in them may become lost or outdated. They should be given to the company commander quickly. Each item should be tagged with the captive and equipment/document tag. If an item was found on a PW, his name should be on the tag and the item should be separated from him.

EXAMPLE OF PW AND DOCUMENT/EQUIPMENT TAG

ATTACH TO PW ○ 123456

DATE OF CAPTURE A
( )
NAME ( )
SERIAL NUMBER ( )
RANK ( )
DATE OF BIRTH ( )
UNIT ( )
LOCATION OF CAPTURE ( )

CAPTURING UNIT ( )
SPECIAL CIRCUMSTANCES OF CAPTURE
( )

WEAPONS/DOCUMENTS ( )

FORWARD TO UNIT 123456 B
( )

DATE OF CAPTURE
( )
NAME ( )
SERIAL NUMBER ( )
RANK ( )
DATE OF BIRTH ( )
UNIT ( )
LOCATION OF CAPTURE ( )

CAPTURING UNIT ( )
SPECIAL CIRCUMSTANCES OF CAPTURE
( )

WEAPONS/DOCUMENTS ( )

ATTACH TO ITEM 123456 C
( )

DATE OF CAPTURE
( )
NAME ( )
SERIAL NUMBER ( )
RANK ( )
DATE OF BIRTH ( )
UNIT ( )
LOCATION OF CAPTURE ( )

DESCRIPTION OF WEAPONS/DOCUMENTS
( )

DOCUMENT AND ( ) ○ WEAPONS CARD ( )

FRONT

ONE-UP SERIAL NUMBER

○
PW
Do not remove this part from PW

Disarm and
Search Thoroughly
( )
Tag Correctly
( )
Report Immediately
( )
Evacuate Rapidly
( )
Segregate by Category
( )
Safeguard from Danger/Escape
( )

PW

BACK OF PART A

NOTE:

Main text to be printed in the national language.

On the back of the lower part should be written in red letters "ATTACH TO CAPTURED WEAPONS AND/OR DOCUMENTS."

Total tag should measure approximately 30 x 10 cm.

APPENDIX A

Military Operations on Urbanized Terrain

SECTION I. INTRODUCTION

GENERAL

Villages and small towns are a common sight in much of the world, particularly in Central Europe. Larger towns, small cities, and major urban centers will often be avoided by mechanized forces. Even so, mechanized infantry units must be ready to fight in urban areas when required. (See FM 90-10 for details.) Fighting in urban areas is usually characterized by HOUSE-TO-HOUSE FIGHTING, RESTRICTED MANEUVER SPACE FOR GROUND VEHICLES, and RESTRICTED OBSERVATION AND FIELDS OF FIRE. As a result, the dismounted infantry role increases markedly.

Platoons and squads will seldom fight alone in urban combat. Normally, they will fight as part of their company or company team. Combat engineers will normally be integrated with infantry. Small engineer teams, such as breaching teams and search teams, should be used.

The rapid rate of expenditure of small arms ammunition and demolition is another characteristic that must be taken into account during urban combat.

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URBAN AREAS

Streets and alleys make ready-made firing lanes and killing zones. Vehicles, being greatly restricted and canalized, are subject to ambush and short-range attack. Tanks are at a disadvantage because their main guns cannot be depressed enough to fire into basements at close range, nor can they be elevated enough to engage targets on upper floors of tall buildings nearby. The BFV, with +60 to -10 degrees elevation of the 25-mm gun and 7.62-mm coaxial machine gun, has a greater capability in this role. Also, with firing port weapons, the BFV can place suppressive fire to the flanks and rear.

Fighting in urban areas will be centered around prepared positions in houses and buildings. These positions should be designed to cover street approaches, and should be protected by mines, obstacles, and booby traps. Hence, bridges, overpasses, and buildings must be inspected and cleared of any mines before they are used. Also, reconnaissance parties must determine the weight-supporting capacity of roads, bridges, and floors to find out if they will support BFVs and tanks. Engineers can be used for these tasks if available.

BFVs and tanks should not be employed alone. Rifle teams should be responsible for protecting specific tanks or their BFVs. BFVs should move along the sides of streets, stay close to buildings, and observe and cover the buildings on the opposite side. BFVs may button up for protection, but vehicle team members must remain alert for signals from the rifle teams. Close cooperation between the rifle team and the vehicle team in the urban environment is critical.

SECTION II. OFFENSE

GENERAL

In urban areas, fighting will be mostly dismounted. The BFVs are employed chiefly in a fire support role. Tanks follow and, as needed, move up to provide heavy direct fire support from locations secured by the leading infantry.

The attacker has the advantage of maneuver and can isolate a built-up area. Once a built-up area has been isolated, a force can either assault it or conduct a siege until the defender surrenders.

The missions of rifle teams engaged in the attack of a built-up area include:

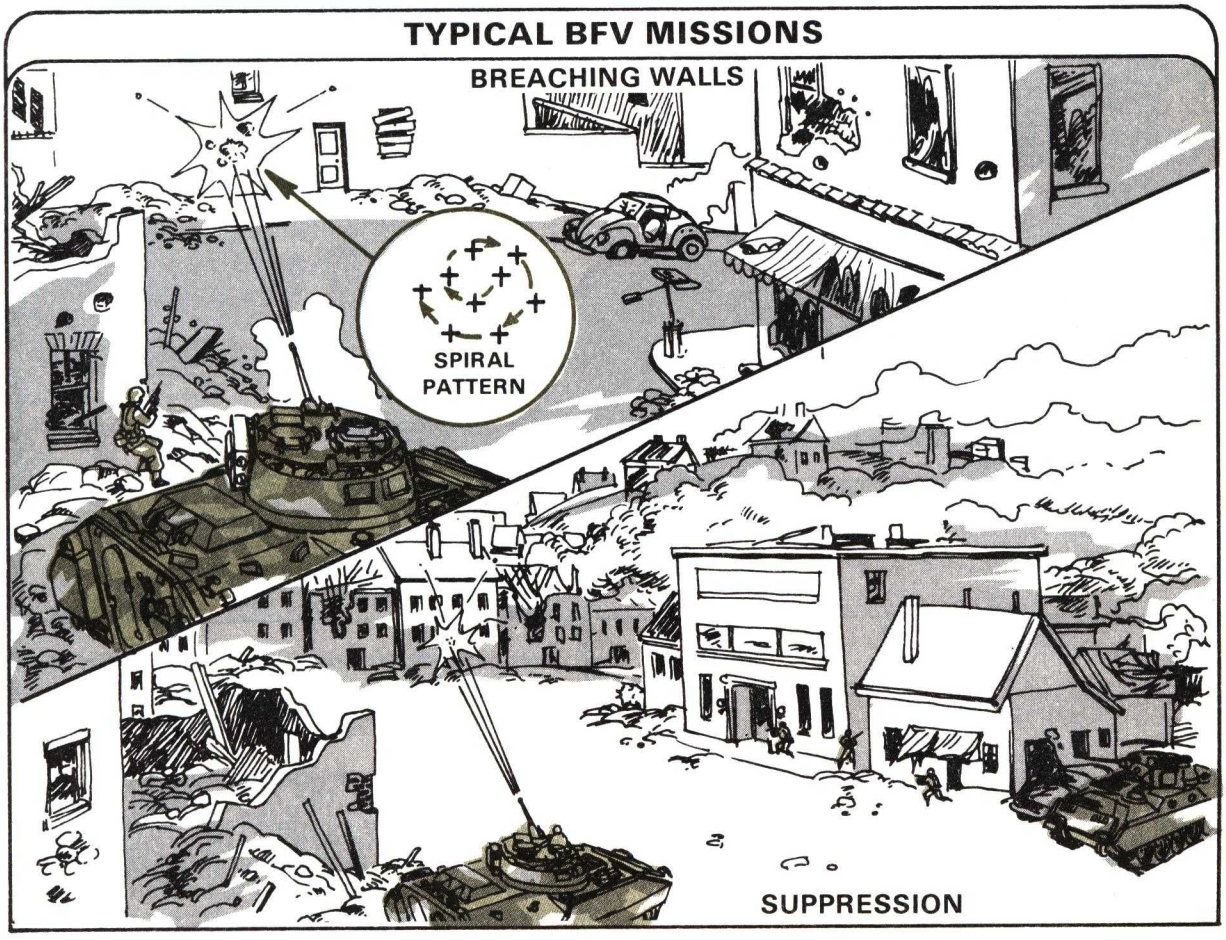
- **Assaulting and reducing enemy positions and clearing buildings under the covering fires of tanks and BFVs.**
- **Neutralizing and destroying enemy antiarmor weapons.**
- **Locating targets for engagement by tank or BFV weapons.**
- **Protecting tanks and BFVs against enemy individual antiarmor measures and surprise.**
- **Securing and defending an area once cleared.**

Typical BFV missions during attacks in urban areas are:

- **Destroying enemy positions within a building with the direct fire of**

the 25-mm gun (using APDS ammunition) and the 7.62-mm coaxial machine gun (when walls are constructed of light material).

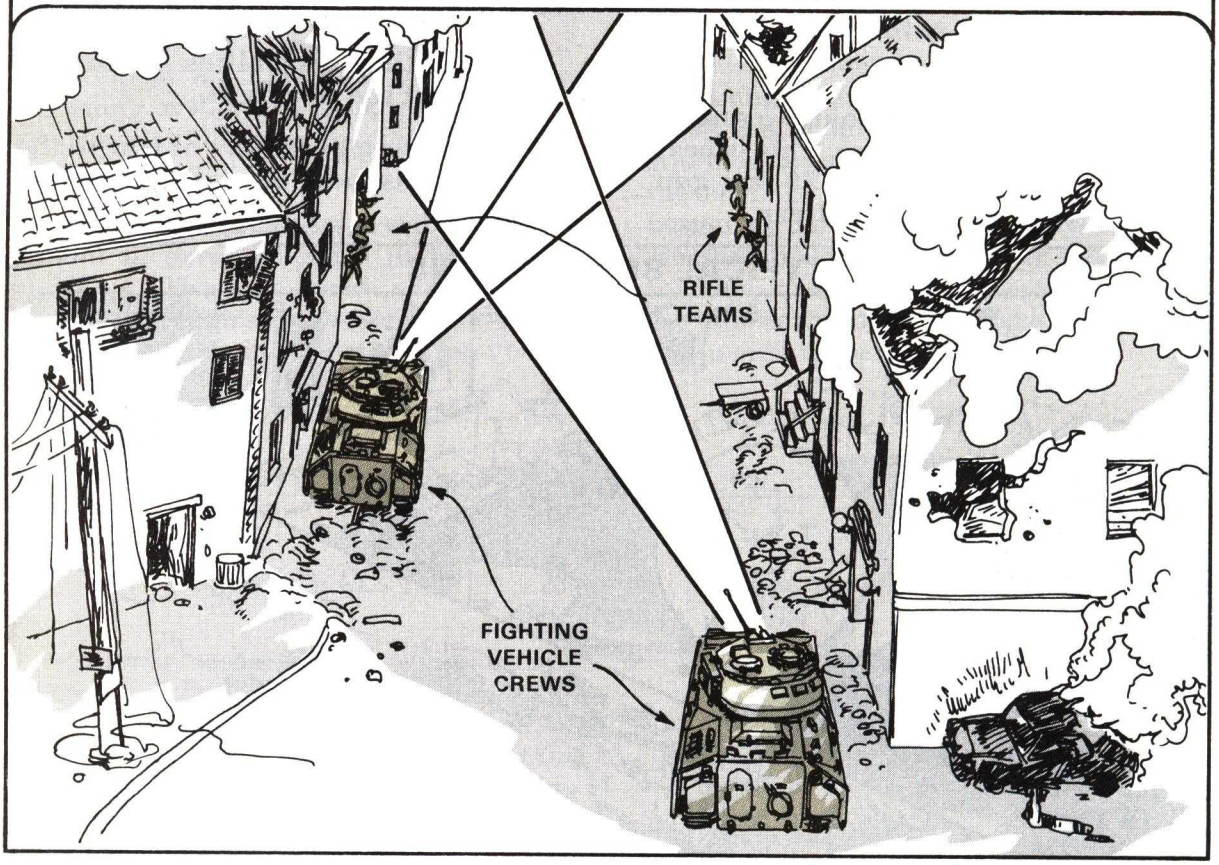
- Suppressing enemy gunners within buildings and adjacent structures.
- Isolating the objective building with direct fire to prevent enemy withdrawal, reinforcement, or counterattack.
- Breaching walls en route to and in the objective structure. This is best accomplished with the 25-mm gun using a spiral firing pattern.
- Establishing a roadblock or barricade.
- Securing cleared parts of the objective.
- Obscuring the enemy's view with the BFV's smoke-screen generator.
- Providing resupply of ammunition and explosives for the assault force.
- Evacuating casualties from the areas of the fire fight.
- Evacuating prisoners of war to the unit prisoner of war collection point.



Platoons and squads use the same general movement techniques on urban terrain as used on other terrain. When moving toward an urban area and contact is possible, traveling overwatch should be used. Upon entry into the urban area, rifle teams should be deployed, and the platoon should move alongside and through buildings, avoiding open areas when possible.

When moving down a street, rifle teams should move staggered on alternate sides of the street. Teams must guard against ground level positions along the street and also should assign two or three men to observe the upper floors of buildings on the opposite side of the street. BFVs, overwatching the rifle teams, should travel staggered on alternate sides of the street.

TRAVELING OVERWATCH



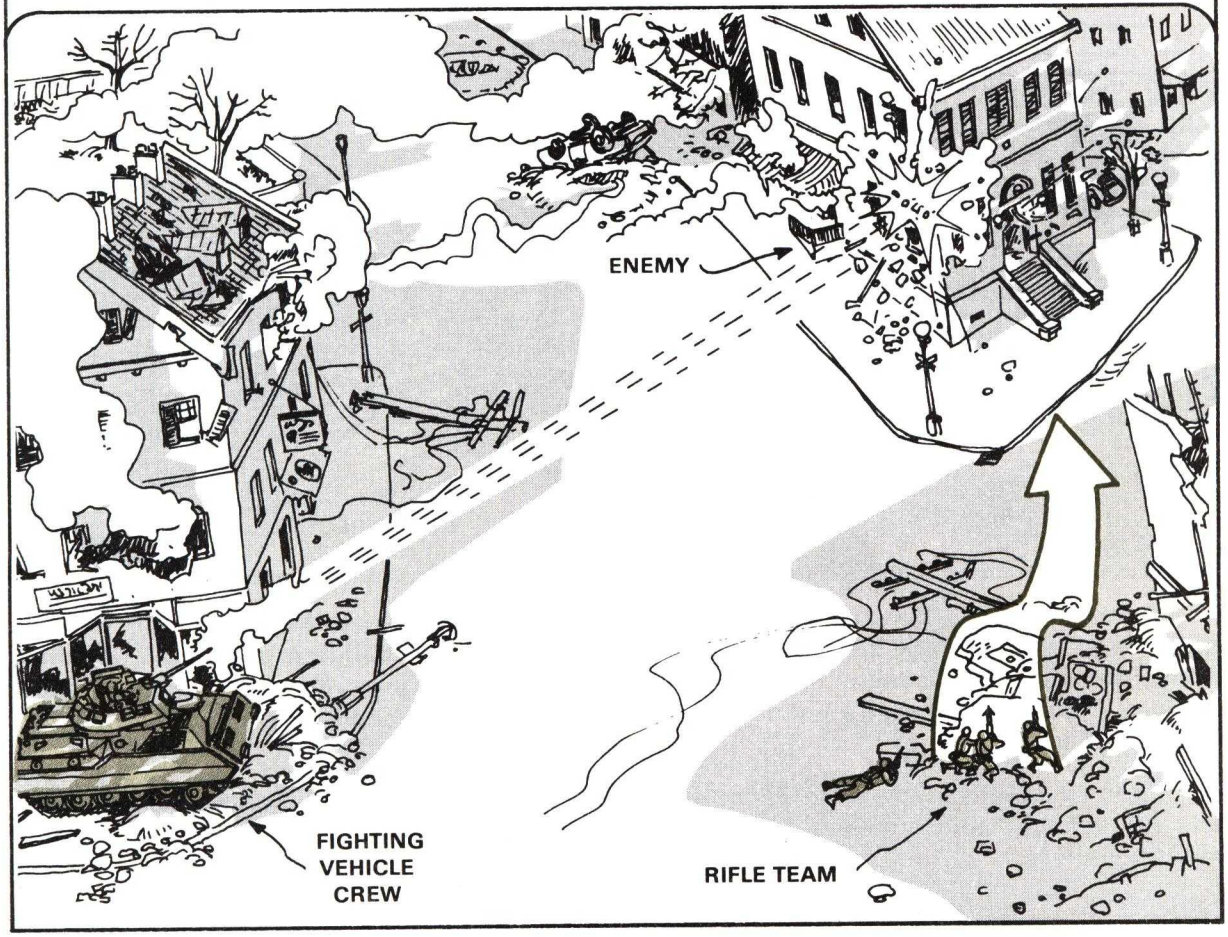
BFV EMPLOYMENT CONSIDERATIONS

In the offense, the BFV is best used to provide direct fire support for the rifle team. The BFV should move behind the rifle team and move up when needed to engage targets located by the rifle teams.

The 25-mm gun is the most effective weapon on the BFV while fighting on urban terrain.

When possible, the rifle teams should stay away from the front of the 25-mm gun so it may fire as required.

BFV FIRE SUPPORT

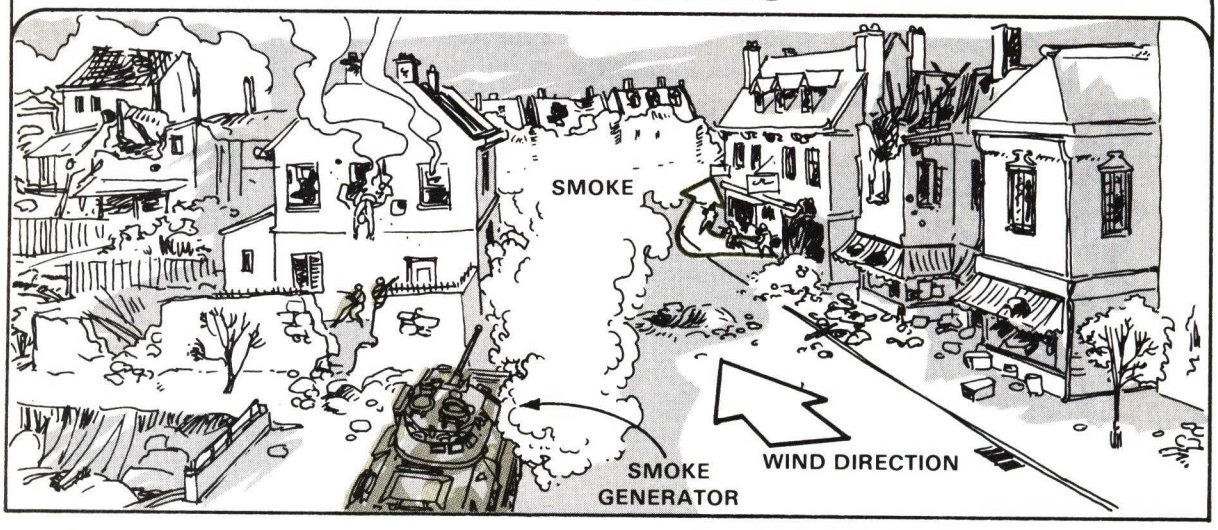


The use of the 25-mm gun in support of rifle teams requires some safety considerations. These are:

- **HEI-T 25-mm rounds arm themselves 10 meters from the gun and explode on contact.**
- **APDS rounds discard plastic sabots to the front of the gun when fired. (This requires a 400-meter safety fan to the front of the 25-mm gun.)**

The BFV's smoke-screen generator can be used in urban areas to cover the movement of the rifle team. But the use of smoke requires additional care because of wind currents between buildings.

SMOKE SCREENING



Communications between the rifle elements and the vehicles are crucial. Communications can be visual or voice signals, radio, or telephone. There is a phone jack on the rear of each BFV.

The dash speed (acceleration) of the BFV lets the vehicle rapidly cross streets, open areas, or alleys.

HOW TO ATTACK AND CLEAR A BUILDING

When attacking an urban area, the most common mission of the platoon is to clear a building or a group of buildings. The platoon leader designates the composition of the dismount element. The makeup of these elements can change with the situation. Each rifle team is organized into two- or three-man assault teams. The platoon leader also may designate a part of the dismount element as a demolition team.

The entire rifle team normally is used to attack one building at a time. (Against smaller buildings, the platoon leader may have a single assault team conduct the attack.)

The attack is conducted in three steps:

1

The BFVs, supported by indirect and direct fire, isolate the building.

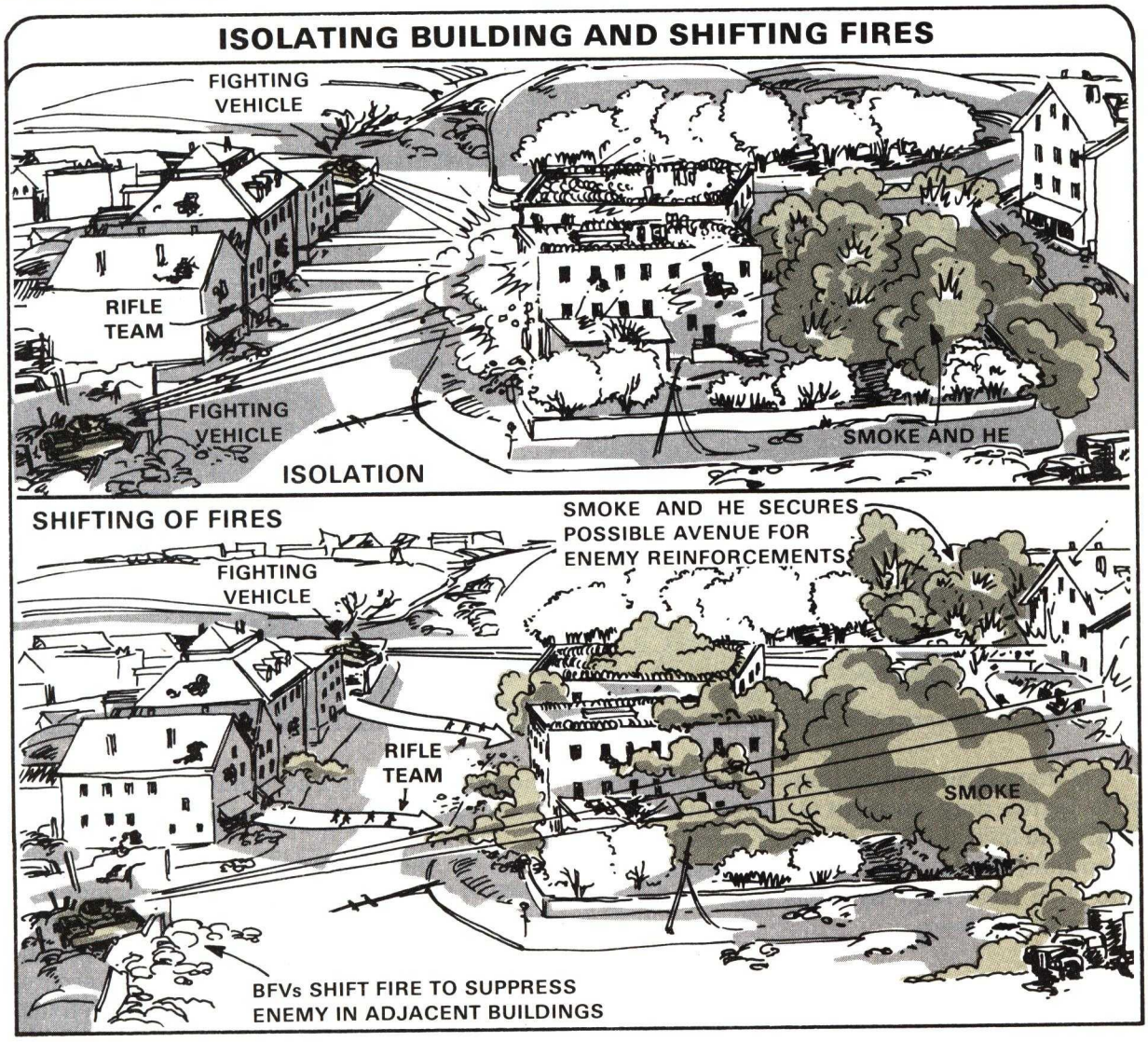
2

The rifle team enters the building to gain a foothold.

3

The rifle team clears the building room-by-room.

To isolate the building, the BFV takes an overwatch position. It fires the 25-mm gun and 7.62-mm coaxial machine gun to suppress enemy troops, in the building and those in nearby buildings, who can fire at the dismount element.



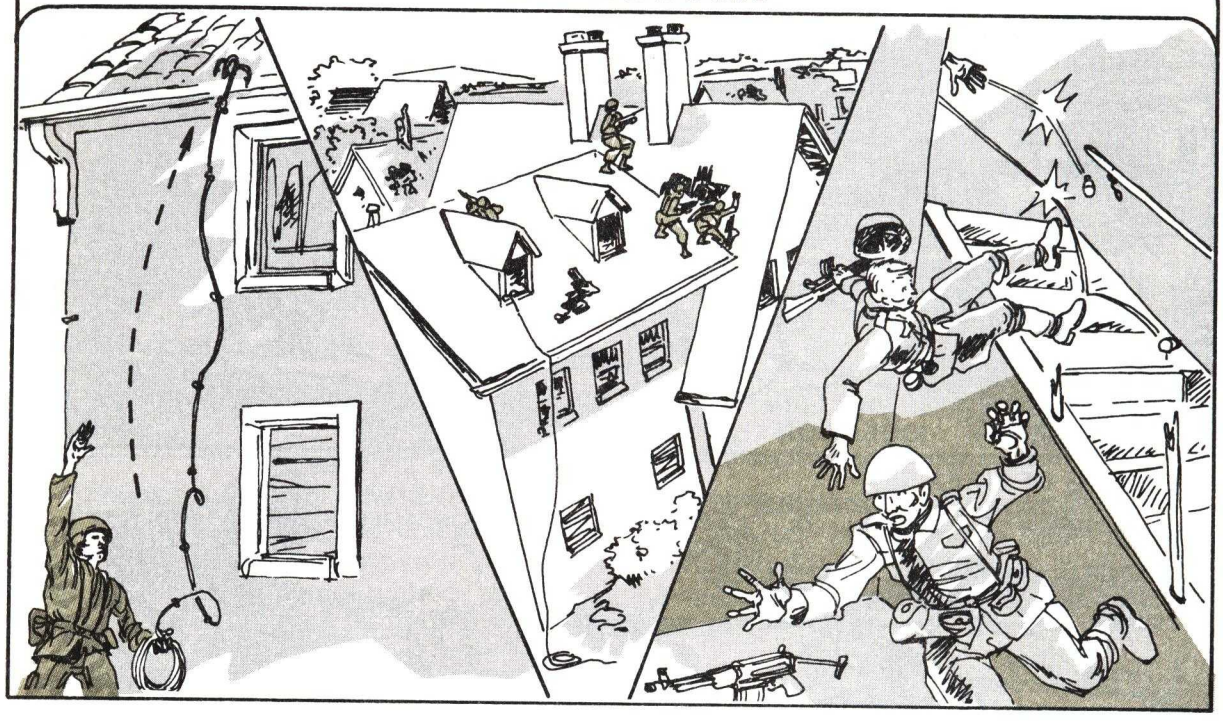
The rifle teams move to the building along covered and concealed routes. Smoke grenades, smoke pots, and the smoke-screen generator on each BFV can provide additional cover.

NOTE:

Targets for Dragons and TOWs in urban areas must be beyond the minimum arming distance of 65 meters.

The rifle teams enter the building at the highest point they can because the ground floor and basement are usually the enemy's strongest defenses, and the roof of a building normally is weaker than the walls. It is easier to fight coming down stairs than going up stairs.

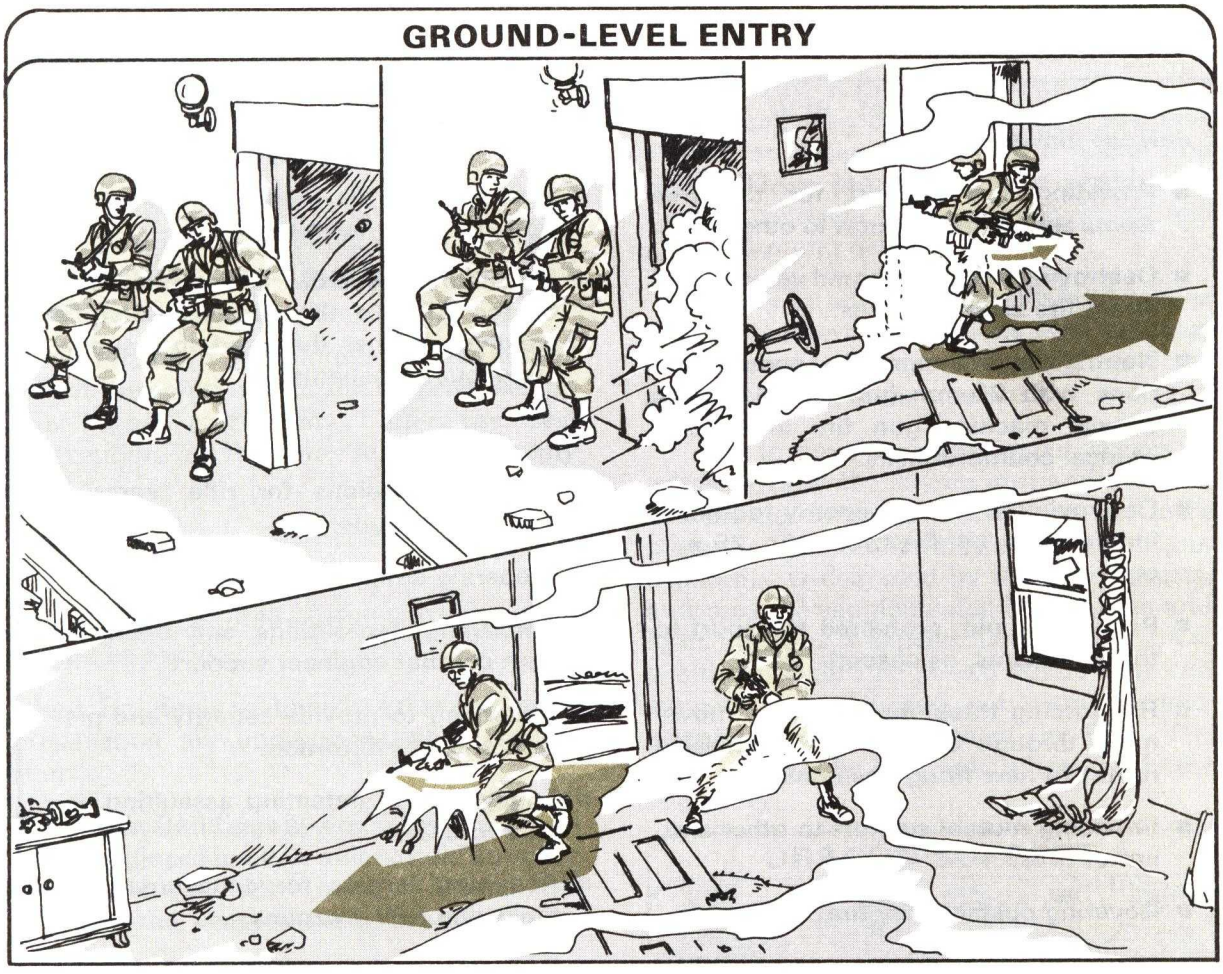
FIGHTING DOWN



If there is no covered route to the roof, the rifle teams may enter at a lower story or at ground level. In this case, they should seize a foothold quickly, fight to the highest story, and then clear room-by-room, floor-by-floor, from the top down.

To enter a building, one of the assault teams moves (covered by fire) to the entry point. One soldier throws a grenade into the room. After the explosion, the assault team enters, one man at a time, overwatched by the other men. The first man rushes in firing his weapon in two- or three-round bursts. He takes a position that gives him coverage of the whole room. The other men enter the room and make a quick but thorough search.

The same procedure is repeated from room to room and floor to floor (to include the basement, if there is one) until the building is cleared of all enemy. It then is considered secured. If it fits in the scheme, the secure building becomes the position from which the assault on the next building is overwatched. This assault may be made by other rifle teams of the same platoon, or by a rifle team from another platoon. The building should be marked to indicate that it is clear of enemy. (Put white engineer tape or chalk marks over the door.)



SECTION III. DEFENSE

GENERAL

As in the attack, most of the fighting in the defense is done by rifle teams. It is harder to build the platoon's defense around the BFV in urban areas than in other types of terrain. But the fighting vehicle crew's role is no less important. A platoon normally defends from positions in one to three buildings. This depends on the size and strength of the buildings, the arrangement of the buildings, and the size of the platoon.

MISSIONS

Typical missions of BFVs in the defense include:

- Providing fire support for the rifle teams and mutual support to other BFVs.
- Destroying enemy armored vehicles and direct fire artillery pieces.
- Neutralizing or suppressing enemy positions with 25-mm gun and 7.62-mm coaxial machine gun fire in support of local counterattacks.
- Destroying or making enemy footholds indefensible by fire from the 25-mm gun.
- Providing rapid, protected transport to the rifle teams, as needed.
- Reinforcing threatened areas by movement through covered and concealed routes to new firing positions.
- Providing mutual support to other antiarmor fires.
- Covering obstacles by fire.
- Providing smoke screens with the BFV's smoke-screen generator.
- Resupplying rifle teams with ammunition and other supplies.
- Evacuating casualties. (The overall value of the BFV to the defense must be weighed against the need to resupply or evacuate casualties.)

Typical missions for rifle teams in the defense include:

- Preparing defensive positions.
- Emplacing demolitions and obstacles with combat engineer support.
- Observing to provide security and prevent enemy infiltration.
- Engaging and defeating assaulting enemy forces.
- Acquiring targets for engagement by tanks and BFV weapons.
- Protecting tanks and BFVs from close-in antiarmor weapons.

Other aspects of defense in urban terrain that the platoon leader should consider are discussed below.

Protection. Reinforced concrete and brick buildings provide the best protection. A reinforced cellar is especially good. Wooden buildings should be avoided.

Dispersion. It is better to have positions in two mutually supporting buildings than in one building that can be bypassed.

Concealment. Although buildings provide excellent concealment, positions in buildings

at the edge of an urban area should be avoided because they are the most likely to receive the heaviest enemy fire.

Fields of Fire. Positions should have good fields of fire in all directions. Wide streets and open areas such as parks may offer excellent fields of fire.

Observation. The buildings selected should permit observation into the adjacent sector. The higher stories may offer the best observation, but they may also invite enemy fire.

Covered Routes. Routes that go through or in back of buildings are best.

Fire Hazard. Buildings that will burn easily should be avoided.

Time. Buildings that need a great amount of preparation are undesirable when time is short.

Strength. Buildings in which BFVs or tanks are to be placed must be able to hold up under the vehicles' weight and withstand the effects of the weapons being fired.

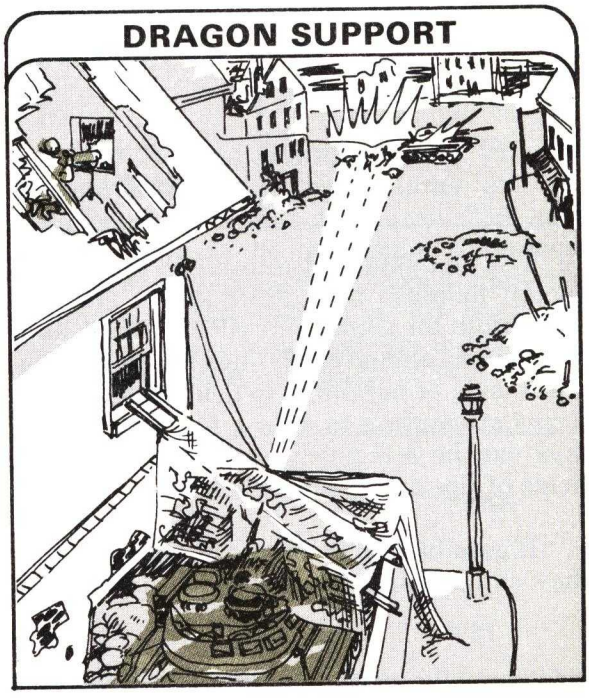
TECHNIQUES

The BFV should be integrated into the platoon fire plan. The 25-mm gun and 7.62-mm coaxial machine gun fields of fire should cover streets and open areas. Once placed in position, BFVs should not be moved for logistical or administrative functions. Other vehicles should accomplish these functions, when possible.

Once the platoon leader picks the building(s) he will defend, he should position his fighting vehicle crew and rifle teams. Dismounted machine guns and squad automatic weapons should be positioned to have grazing fire. Dragons should be positioned on upper stories for longer range and for firing at the tops of tanks. If it can be done, supplementary and alternate positions should be designated for rifle teams and BFVs. These positions should permit continuous coverage of the primary sector and allow all-round defense.

It may be advisable in certain instances to move to alternate positions with the onset of darkness to deceive the enemy as to the actual location of the platoon.

Due to the close engagement ranges on urban terrain, the 25-mm gun and the 7.62-mm coaxial machine gun will be used more than the TOW. The BFV's TOW antitank capability is degraded by the short ranges, and must be supplemented by Dragons and light antitank weapons. Dragon and LAW positions should be placed where they can support the BFV and not attract enemy attention to the location of the BFV. The TOWs should be used only when absolutely necessary.



When firing the LAW, Dragon, or TOW from within a room, backblast characteristics must be taken into account. In urban combat, the backblast area for these weapons is more dangerous because of rubble and the channeling effect caused by buildings, narrow streets, and alleys. Antitank weapons should not be fired from unvented or enclosed rooms. The BFV's TOW, however, can be fired from any room large enough for the vehicle, if all hatches are closed and if no dismounted troops are in the room. By wetting down the floor of the room or building, the signature produced by the backblast may be significantly reduced.

BACKBLAST AREA

WEAPON	MINIMUM DIMENSIONS			
	ROOM SIZE	CEILING HEIGHT	VENT SIZE	MUZZLE CLEARANCE
TOW	17 x 24 FT	7 FT	20 SQ FT	9 IN
DRAGON/ 90-MM	15 x 12 FT	7 FT	20 SQ FT	6 IN
LAW	4 FT TO THE BACK WALL	7 FT	20 SQ FT	0

The platoon can use obstacles to hamper enemy mobility and allow longer engagement time for tanks and BFVs. Mines and demolitions should be planned for the outside and inside of buildings to neutralize enemy forces attempting to gain a foothold. Buildings can be selectively rubbled to improve fields of fire and create obstacles.

If possible, BFVs should be positioned so they can engage the enemy at the longest possible ranges. Initially, BFVs can be placed forward on the edge of the urban area to gain long-range shots, and then displaced to the rear before becoming decisively engaged. If this technique is used, dismounted security must be provided for the vehicles. Concealed routes to supplementary and alternate positions should be chosen and reconnoitered by the BFV. The speed of the BFV can assist in the rapid movement from one position to another.

APPENDIX B

Bradley Onboard Weapons

SECTION I. INTRODUCTION

GENERAL

The onboard armament of the BFV includes turret weapons and firing port weapons. The turret weapons are the 25-mm automatic gun, the TOW missile launcher, and the 7.62-mm coaxial machine gun. The firing port weapons (FPW) are all 5.56-mm lightweight rifles, M231.

THE TURRET

The fighting vehicle has a two-man turret. The Bradley commander and the gunner operate from the turret. The commander controls the operation of the vehicle, weapons, and personnel. Even though the gunner's primary job is to fire the turret weapons, the commander can still fire the turret weapons if necessary.

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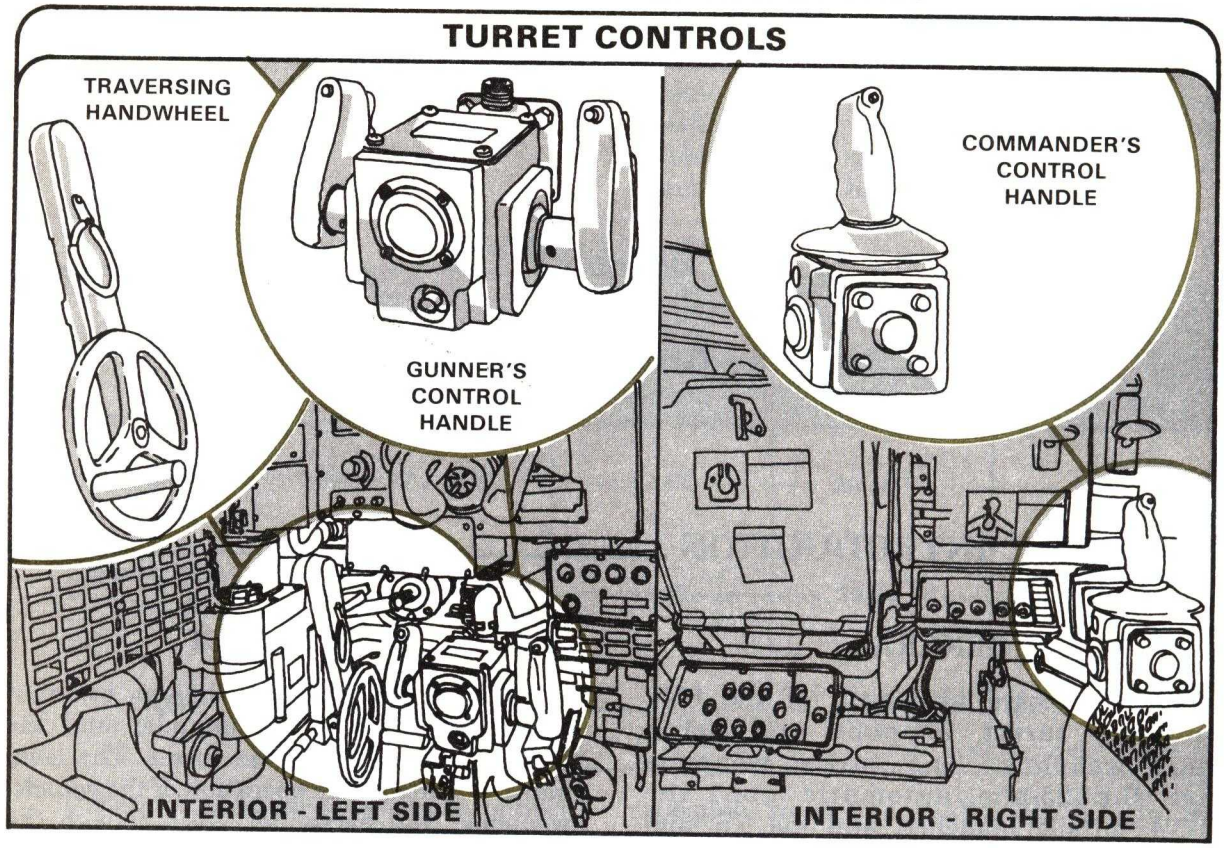
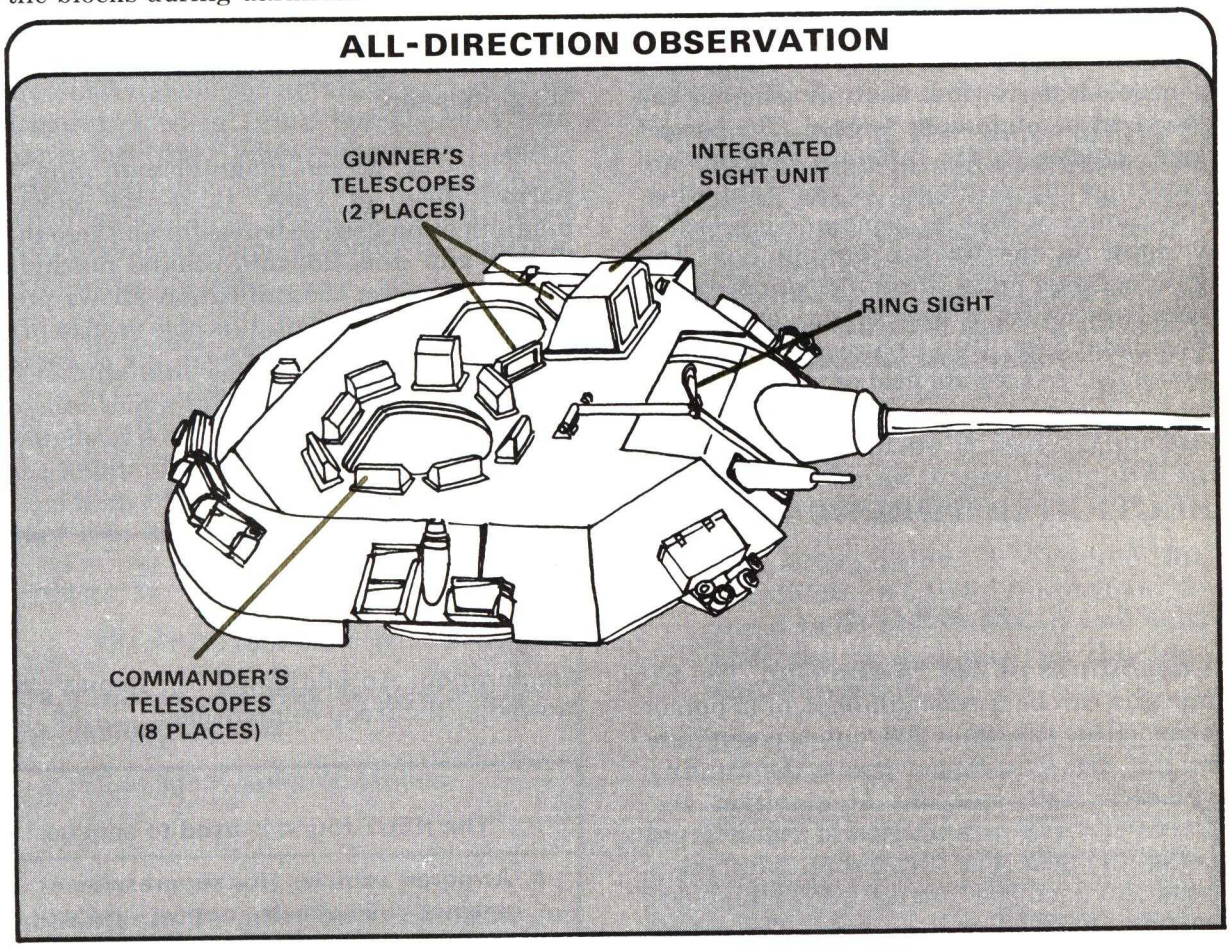
The turret traverses 360 degrees, using either the electric turret drive or the manual mode system. The Bradley commander can override the gunner's control of the turret by using the control handle at the commander's position. The gunner operates the turret electrically by using the gunner's control handles or manually by using the traverse or elevation handwheel.



The vehicle's stabilized turret allows the 25-mm gun and 7.62-mm coaxial machine gun to be fired while the vehicle is moving. The stabilization system holds the gun and coaxial machine gun steady while the vehicle moves. The gunner must keep an accurate sight picture using his gunner's control handles. The stabilization does not keep the gun on the target; the gunner does. The stabilization system merely keeps the gun parallel to the line on which it is laid.

The turret has vision blocks around the Bradley commander's position and an auxiliary sight. This allows all-direction observation. The gunner has two vision blocks for daylight viewing. They are sited to the right and to the left of the main sight. Each vision block has a blackout curtain that prevents light from inside the turret passing through the blocks during darkness.



The ISU can be used with all turret weapons during normal and limited visibility. The sight has two eyepieces, one for the commander and one for the gunner; both display the same view. The daysight has 4x and 12x power magnification capability using normal optics. The nightsight has 4x and 12x power magnifica-

tion, but it uses thermal imagery and supercooled circuits that must be activated for about 10 minutes before they are effective. A sensor-selector switch controls whether the daysight or nightsight is used. The correct sight reticles for the different weapons are automatically displayed in the sight when the gunner or Bradley commander selects a weapon on the weapon control box. The gunner has a unity window or unmagnified persicope, which is used for target observation in daylight. The 4x power magnification of the ISU has a wide field of view for target acquisition. It can be used to engage targets by the burst-on-target method of adjustment, but it is not as effective as the 12x power magnification.

The 12x power magnification has a narrow field of view. It is the power magnification used to boresight and zero the 25-mm gun and 7.62-mm coaxial machine gun. This power magnification allows precise target engagement. It is also used to fire the TOW. The sight must be in 12x power to start the TOW self-test cycle.

SECTION II. TURRET WEAPONS

25-MM GUN

Capabilities of the 25-mm Gun. The 25-mm gun can be fired single shot, or in bursts using either the 100 or 200 rounds per minute rate of fire. The 25-mm gun is the fighting vehicle's main weapon. Ammunition and technique of fire are selected to fit the target being engaged. For illustration purposes a basic load of 300 rounds APDS and 600 rounds of HEI-T will be used. The actual ammunition basic load will depend on the factors of METT-T. For specific basic load, see the unit SOP.

The 25-mm HEI-T round explodes on impact and produces fragmentation. With the above basic load, the HEI-T is placed in the ammunition can on the right side of the turret. This can holds up to 230 rounds of ammunition. An additional 370 rounds are stowed in the troop compartment.

The HEI-T round is used to engage:

- **Armored vehicles (for suppression or against roadwheels, optics, and external fuel cells).**
- **Unarmored vehicles.**
- **Helicopters.**
- **Fixed-wing aircraft (self-defense only).**
- **Crew-served weapons.**

Trigger control lets the gunner fire single shot or short bursts. The availability of ammunition and the nature of the target are considered when firing bursts. As a rule, bursts are fired when suppressing enemy ground-mounted weapons, in emergencies when about to be engaged by an enemy vehicle that is capable of destroying the BFV, or at aerial targets.

The 25-mm APDS round is designed to penetrate and destroy lightly armored vehicles. Using the basic load given above, 70 rounds of APDS ammunition are loaded into the ammunition can on the left side of the turret. An additional 230 rounds of APDS are stowed in the troop compartment.

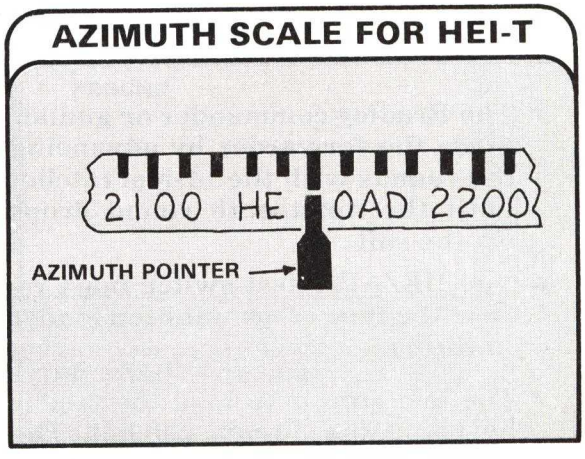
The APDS round is used to engage:

- **Armored personnel carriers/infantry fighting vehicles.**
- **Other lightly armored targets.**

Loading the 25-mm Gun. Loading the gun is a precise operation. Fighting vehicle personnel must follow set loading procedures to avoid a weapon malfunction. HEI-T and APDS rounds are loaded into two separate ammunition cans. There is a large section for HEI-T ammunition (230 rounds) on the right and a smaller section for APDS ammunition (70 rounds) on the left. The gunner and two soldiers in the troop compartment do the loading and reloading.

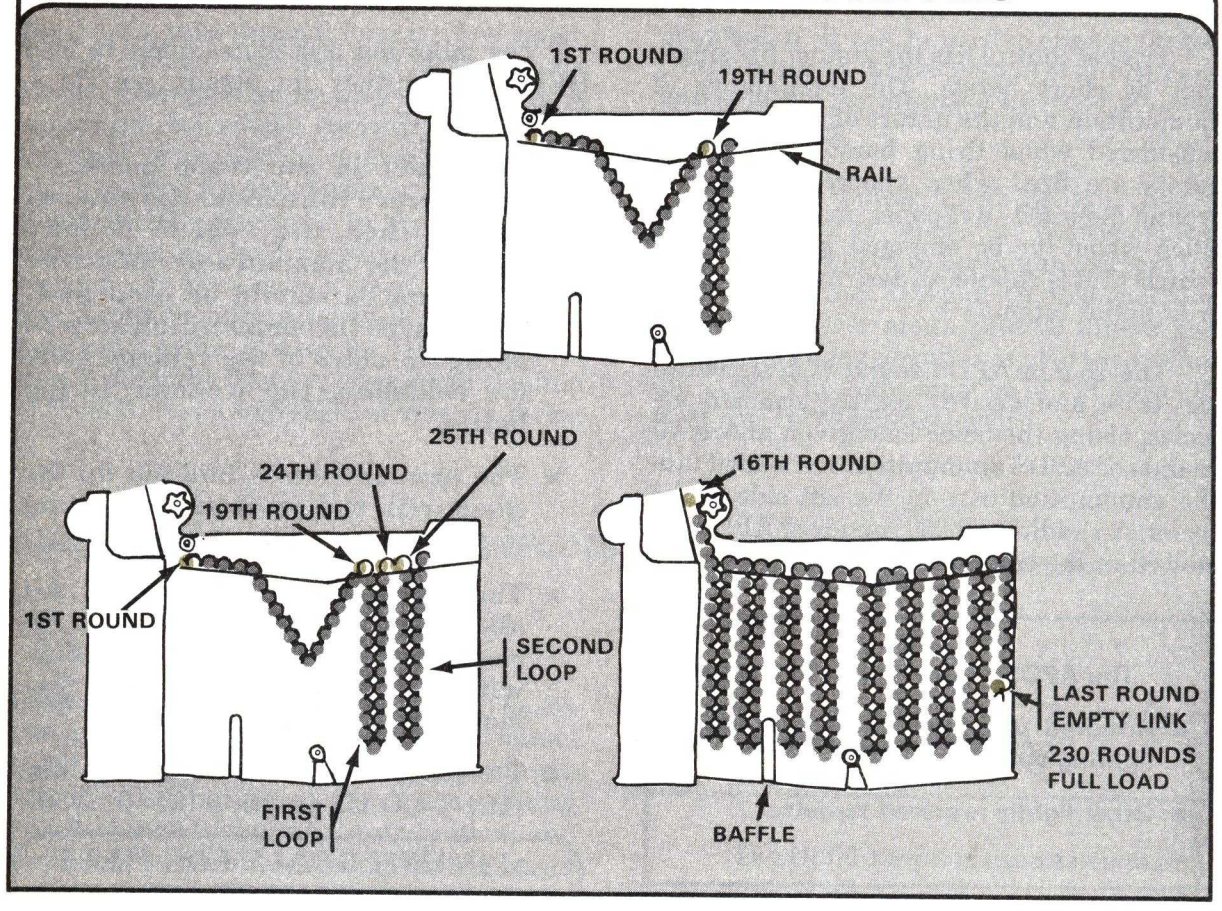
The following procedures apply to load HEI-T ammunition (for details, see TM 9-2350-252-10-2):

- **Personnel in the troop compartment secure the ammunition stored there. When the vehicle is fully loaded, the ammunition under the floor boards should be used first. This leaves the ammunition stowed along the sides of the vehicle ready for reloading the weapon during battle.**
- **The ammunition is laid out on the floor with the projectiles pointing to the right of the vehicle.**
- **The ammunition is checked for alignment and linked into four 50-round belts and one 30-round belt, with the double-link of the ammunition leading.**
- **The turret door is turned to the HEI-T LOAD position (2150 mils).**



- The first five rounds are counted off and laid on top of the rail.
- The nineteenth round of the belt is placed on the rail.
- The twenty-fourth and twenty-fifth rounds are put on top of the rail. This procedure is repeated until all rounds are loaded in the ammunition can.

HEI-T AMMUNITION LOADING PROCEDURES



- The Bradley commander or gunner loads the forwarder by advancing the rounds with the 14-mm ratchet until the nineteenth round drops off the rail.
- The HE/AP select switch must reflect the type of ammunition loaded in the can.
- The last step is to load the feeder by using the 14-mm ratchet. The rounds should be moved up the chute until the first round of AP or HE causes the appropriate feed shaft stop to come out. The 14-mm ratchet is then placed on the feed shaft extension for the selected type of ammunition to load in the feeder. Once loaded, tension must be released off the feeder by placing the ratchet on both forwarding extensions and releasing the tension.

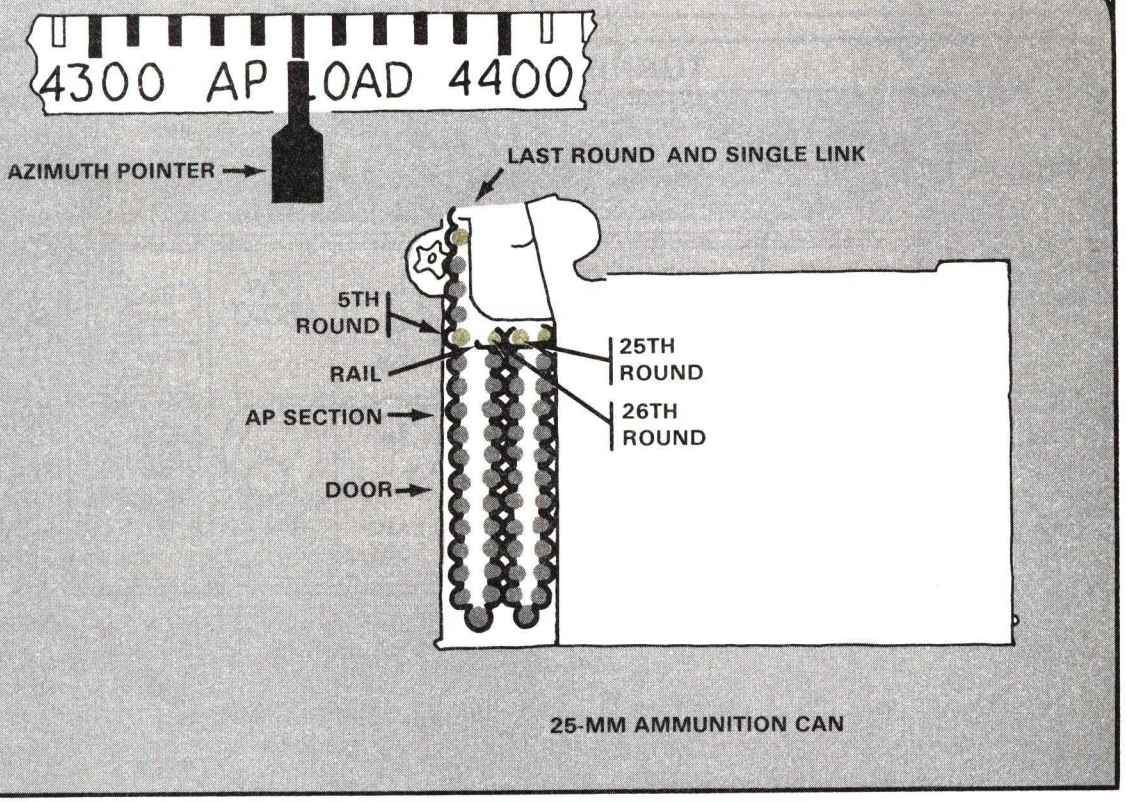
To load APDS ammunition, the HEI-T loading procedures are used with the following exceptions:

- A 70-round belt of APDS is linked and laid on the troop compartment floor with the projectiles pointing to the left.
- The turret is rotated to APDS LOAD (4350 mils).
- Only one round is placed on the rail, with the double-link forward. Then the 25th and 26th rounds are placed on the rail.
- The HE/AP selector switch must reflect APDS ammunition.

NOTE:

The situation may dictate that the type of ammunition loaded in the ammunition cans be of a different type than is normally loaded there. The ammunition types can be reversed intentionally, or one type of ammunition can be loaded into both cans. In either case, the ammunition switch reverse lever in the ammunition can must be changed to the type of ammunition actually in the can. This causes the correct sight reticle to be displayed in the ISU. The gunner then selects the ammunition can he wants to fire, without regard to the type of ammunition normally carried in a particular ammunition can or displayed on the weapon control box.

APDS AMMUNITION LOADING TECHNIQUES



When the number of rounds in the ammunition cans gets low, a photoelectric cell is activated and the gun is prevented from firing. If the tactical situation warrants, the gunner can press the low ammunition override (LO AMMO OVRD) on the weapon control box and continue firing. However, it is better to reload immediately if the situation allows. It is easier to attach additional belts to the ammunition already loaded than it is to reload an empty ammunition chute. Reloading is difficult and time consuming. Only in an emergency should the LO AMMO OVRD button be used.

The low ammunition points for the different ammunition cans are:

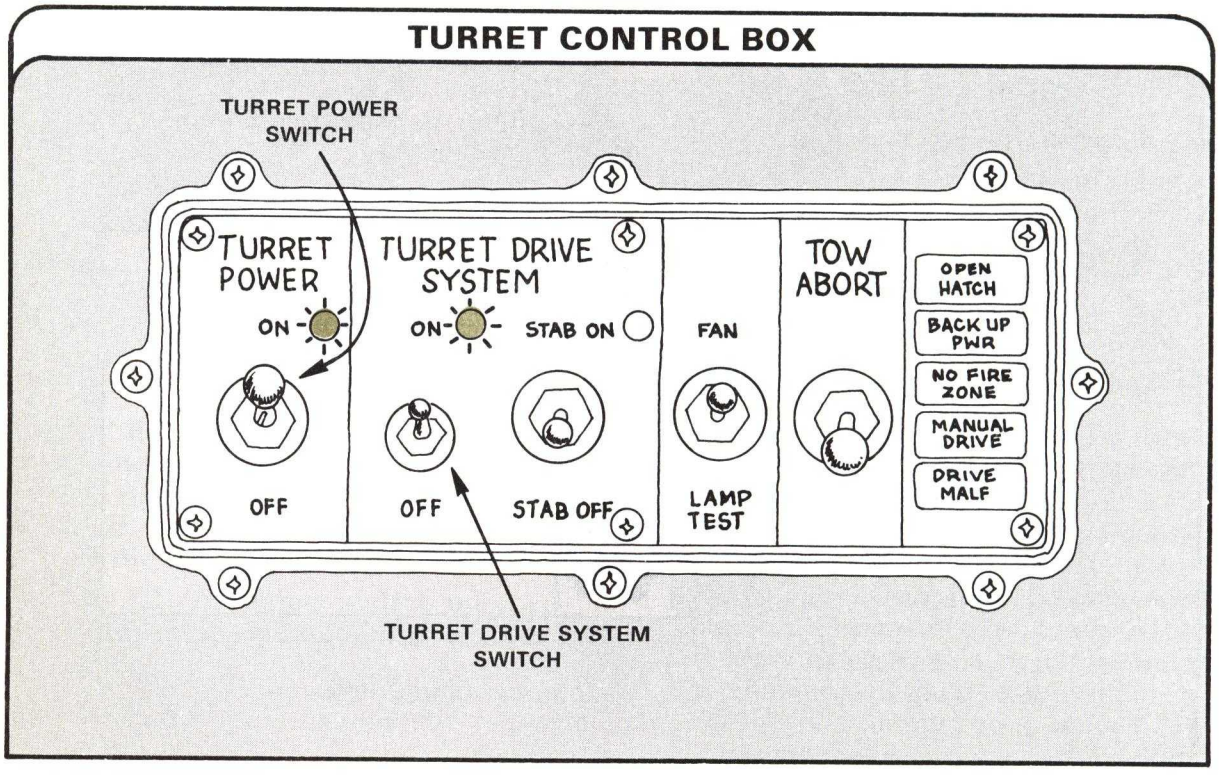
- **HEI-T (right can), 74 to 75 rounds remaining.**
- **APDS (left can), 25 to 26 rounds remaining.**

Firing the 25-mm Gun. The 25-mm gun can be fired using turret power or the manual backup system.

Power Mode

To fire the 25-mm gun in the power mode:

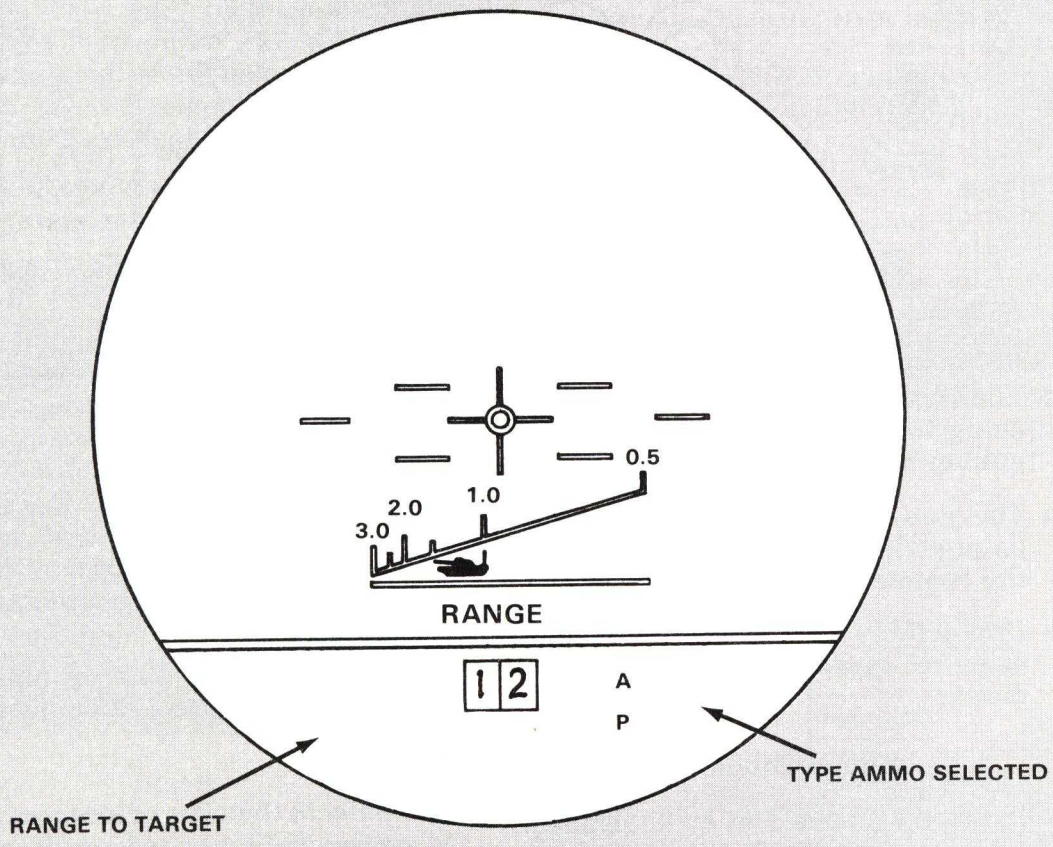
- **The master power switch at the driver's station is turned ON, and the turret power and turret drive at the Bradley commander's station are turned ON.**
- **The gunner selects either day or night mode on the ISU in 12x power magnification.**
- **The gunner selects the type of ammunition and rate of fire based on the Bradley commander's fire command.**



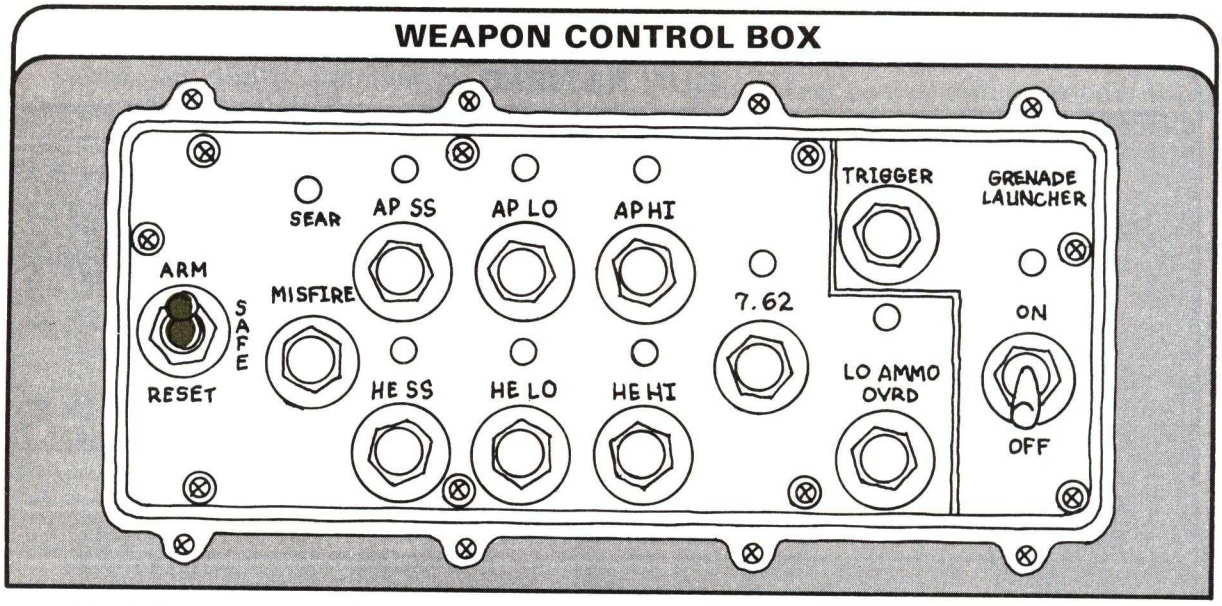
- He places the manual SAFE handle on the track assembly of the 25-mm gun on FIRE.

- When the target is identified, the range is estimated using the stadia lines in the sight reticle.

GUN RETICLE



- The estimated range is indexed on the range control of the ISU.
- The ammunition type and rate of fire are selected on the weapons control box, and the ARM-SAFE-RESET switch is pulled out and moved to ARM.



- The target is reacquired and tracked using the Bradley commander's or gunner's control handles.
- The gun is fired by pressing the palm switch and trigger button on the commander's control handles.
- Corrections are made using the burst-on-target method of adjustment.

Manual Mode

To fire the 25-mm gun in the manual mode, the gunner sets the manual power select levers in the correct positions and performs the following steps:

- Turns the turret power ON using the auxiliary batteries to power the ISU and gun.
- Moves the turret traverse and elevation manual-power select levers to MANUAL.
- Moves the TOW manual-power select levers to POWER so that the elevation linkage is not damaged.
- Selects either day or night mode on the ISU in the 12x power magnification.
- Selects the type of ammunition and rate of fire based on the Bradley commander's fire command.
- Reaches into the gun well and moves the manual SAFE handle on the bolt track assembly of the gun to FIRE.

- **When the target is identified, estimates the range using the stadia lines in the sight reticle.**
- **Indexes estimated range on the RANGE control of the ISU.**
- **Selects the ammunition type and rate of fire on the weapon control box, and pulls the ARM-SAFE-RESET switch out and moves it to ARM.**
- **Reacquires and tracks the target using the traverse and elevation handwheels.**
- **Fires the gun by pressing the trigger button on the traversing handwheel. (Can also be fired by pressing the trigger switch on the gunner's control handle.)**
- **Makes corrections using the burst-on-target method.**

NOTE:

When the vehicle is using the auxiliary batteries to fire the weapons, only the ISU, turret weapons, and radio are powered. There is no power for the Bradley commander's control handle or the gunner's control handles. In the silent-watch mode, the engine is not on but the master switch is. The vehicle's batteries will then power the radios and the electric turret drive. The engine must be started periodically to keep the vehicle batteries charged.

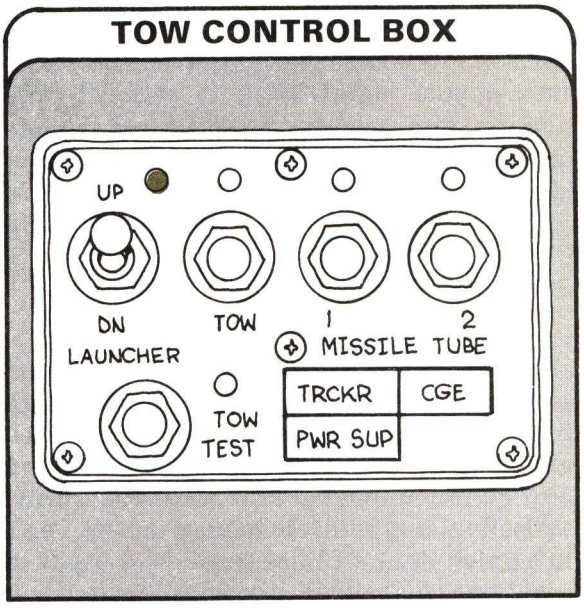
TOW

General. The BFV has a TOW launcher mounted on the left side of the turret. The launcher holds two TOWs, which are fired one at a time. Up to five TOWs can be stowed in the troop compartment. The launcher is normally reloaded through the cargo hatch in combat situations. It can also be loaded from the top of the vehicle, when the fighting vehicle is in a secure location, such as an assembly area.

The TOW has at least a 90-percent probability of hitting a target out to 3,750 meters. The primary target for the TOW is the tank. Other critical targets, such as command and control vehicles, bridging equipment, or air defense weapons, could also be designated as TOW targets, but it may be better to engage those targets with the 25-mm gun if the APDS round will destroy them.

Loading the TOW. To load the TOW launcher the following steps are taken:

- **The turret is turned to the TOW LOAD position (5950 mils).**
- **The travel lock is set and the UP/DOWN switch on the TOW control box is moved to UP by the gunner.**



- **The ARM-SAFE-RESET switch is moved to RESET and SAFE.**
- **The launcher is elevated to the full UP position (+29 degrees).**

- **The turret drive system is set on OFF.**
- **The cargo hatch is opened to the TOW LOAD position.**
- **A TOW is prepared to be loaded by taking off the clamp and cover on the forward end of the missile.**

NOTE:

This should be done while the first six steps are being accomplished.

- **The missile is loaded and secured in the launcher.**
- **The cargo hatch is closed and secured.**
- **Turn turret drive system power ON.**
- **The travel lock is released, and the turret and the launcher are returned to the horizontal position, or to the stowed position.**

Firing the TOW. To fire the TOW the following steps are taken:

- **The manual-power select levers for traverse and elevation are moved to the POWER position.**
- **The TOW launcher is raised to the firing position by the gunner moving the lever on the TOW control box to the UP position and squeezing on the gunner's control handles.**
- **The ISU is set on 12x magnification for day or night mode.**
- **The TOW weapon system is selected on the weapon control box by pushing the TOW button.**

- **The TOW self-test runs automatically for about 12 seconds. If the TOW is good, the TOW indicator light will come on, and the TOW test light will go off. If the TOW test light stays on, the gunner should check the TOW control box for the annunciator light.**
- **The target is identified in the ISU.**
- **The crosshairs are centered on the target using the gunner's or commander's control handles.**

NOTE:

Once the Bradley commander relinquishes control to the gunner, he cannot regain control until the sequence is complete.

- **The MISSILE TUBE 1 button on the TOW control box is pushed to check if the tube is loaded. If the tube is empty, a yellow light will flash.**
- **The ARM-SAFE-RESET switch is pulled out and moved to ARM.**
- **Open the ballistic shield doors for the day and night sights.**
- **The missile is fired by squeezing the trigger on the gunner's or commander's control handle.**
- **The crosshairs are kept on the target until the missile impacts.**
- **The ARM-SAFE-RESET switch is moved to SAFE.**
- **The second TOW is fired by pushing the MISSILE TUBE 2 button and squeezing the trigger on the gunner/commander's control handle.**

NOTE:

The TOW can be fired manually but should be fired only at stationary targets. Targets at the halt could be engaged in extreme circumstances because the crosshairs could be placed on the target and left there. Because the gunner has to manually track a moving target with the traverse and elevation handwheels, he should not fire the TOW at a moving target.

TACTICAL CONSIDERATIONS FOR TOW

The TOW complements and reinforces the antiarmor fires of the Dragons and light antitank weapons used by the rifle teams. The TOW also complements the fires of the BFV's 25-mm automatic gun. When possible, the TOW should be used against tanks at maximum standoff range. The BFV can carry a total of seven TOW and Dragon missiles. Rarely should a TOW be fired at lightly armored vehicles, bunkers, or helicopters. Priority of TOW target engagement should be: armored vehicles and weapon positions. For additional tactical considerations for employing the TOW, see TC 23-23 and FM 7-91.

7.62-MM COAXIAL MACHINE GUN

General. The 7.62-mm machine gun is mounted coaxially with the 25-mm gun. It is used to destroy troops, to destroy unarmored area and point targets, to suppress likely enemy positions, and to reconnoiter by fire. The 7.62-mm coaxial machine gun is effective in these roles because of its high volume of fire, natural projectile dispersion, and large onboard ammunition load.

The 7.62-mm coaxial machine gun ammunition can holds 750 rounds with 50 additional rounds in the feed chute. There

are 1,540 rounds stowed in the troop compartment of the BFV. The standard mixture is four rounds of ball to one round of tracer ammunition. Tracer burnout is 900 meters. The machine gun has a cyclic rate of fire of 650 to 950 rounds per minute.

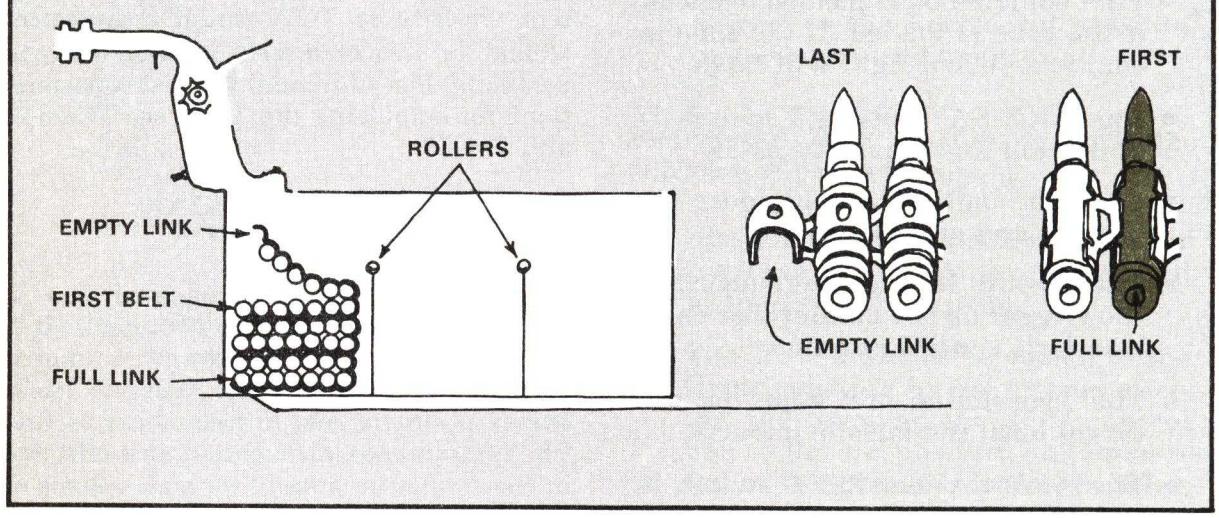
The 7.62-mm coaxial machine gun is used to engage:

- **Dismounted infantry.**
- **Crew-served weapons.**
- **Antitank guided missile teams.**
- **Trucks or other unarmored vehicles.**
- **Positions with lightly constructed cover.**
- **Aircraft.**

The procedure to fill the 7.62-mm coaxial machine gun ammunition can is:

- **A 100-round belt of ammunition is secured from the rear stowage and inspected for alignment and link damage.**
- **The ammunition is passed into the turret to the vehicle commander.**
- **The belt is placed in the first section of the ammunition can (projectiles facing outboard). The end of the belt with the full link always goes into the ammunition can first. The end with the empty link goes in last.**
- **The belt is folded by layers in the first section.**
- **Additional belts are attached to the first belt.**

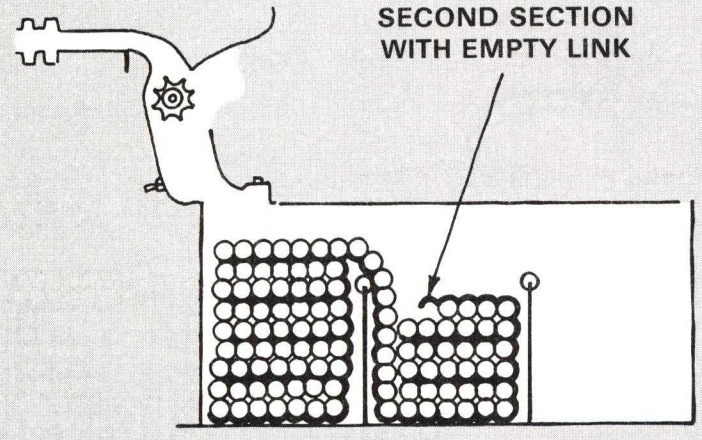
LOADING THE AMMUNITION CAN



- **After the first section is full, the belt is guided over the roller, straight down the wall, to the bottom of the second section.**

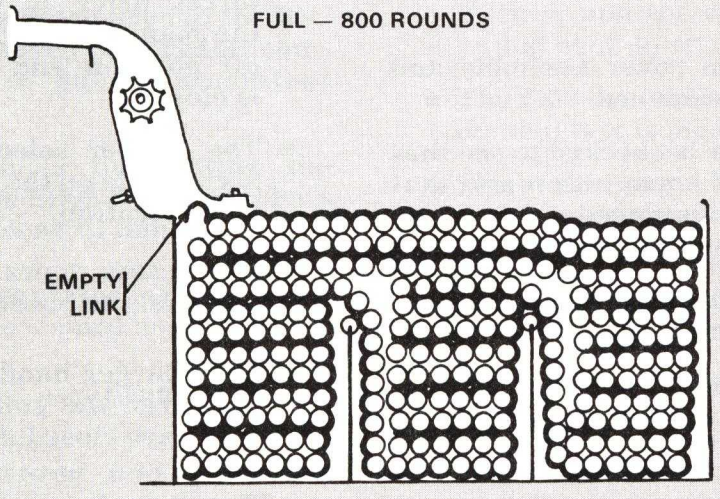
- Belts are linked together until the second and third sections are full.

SECOND SECTION LOADING



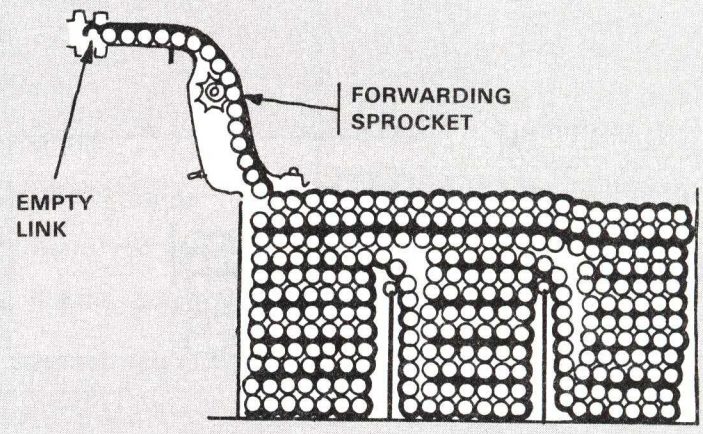
- When the third section is full, the belt is guided back across all three sections until four layers of ammunition cover the three sections. This should be 800 rounds of 7.62-mm ammunition.

THIRD SECTION LOADING



- **The chute is loaded by pushing the last round up the chute until the front of the belt stops at the gun feed tray.**

LOADING THE CHUTE

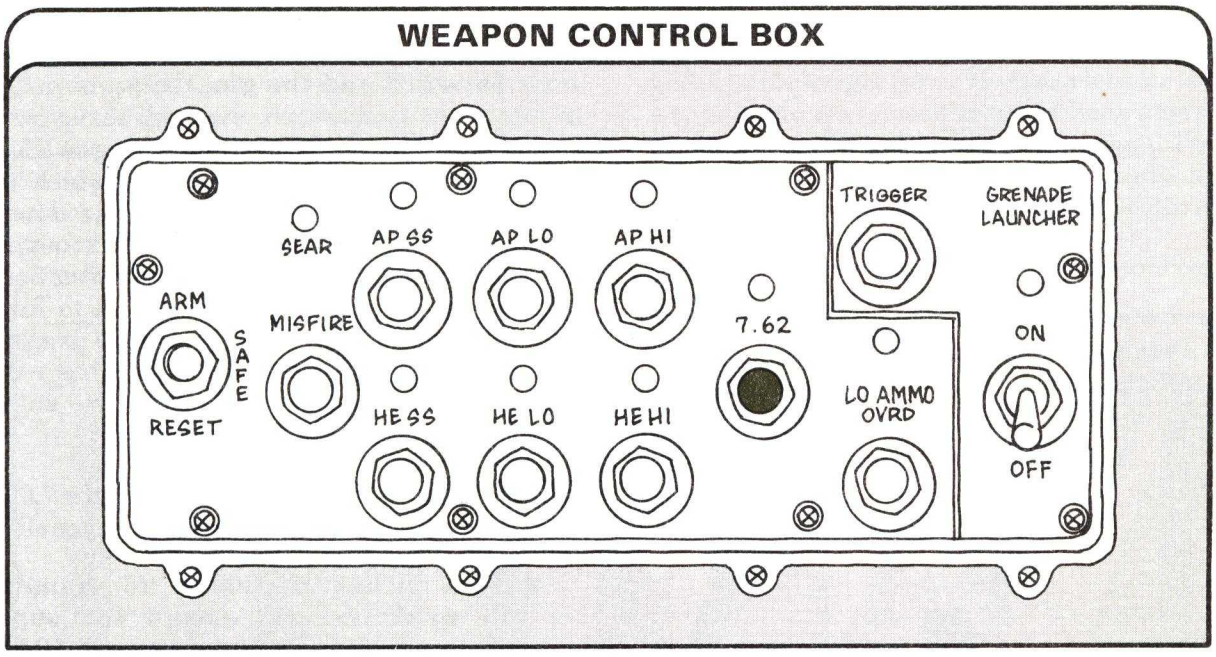


Loading the 7.62-mm Coaxial Machine Gun. The procedure to load the 7.62-mm coaxial machine gun is:

- **The weapon is charged and put on SAFE.**
- **The 7.62-mm cover assembly and feed tray are opened.**
- **The chamber is checked to see that it is clear of ammunition and that the feed tray is closed.**
- **The ammunition is placed in the feed tray with the first cartridge against the cartridge stop.**
- **The assembly cover is closed.**

Firing the 7.62-mm Coaxial Machine Gun. The procedure to fire the 7.62-mm coaxial machine gun in the turret power mode is:

- **Master vehicle power switch at the driver's station is turned ON, and the turret power and the turret drive are turned ON. (Insure that turret drive is turned off until the manual SAFE switch is in the off position and the access door is closed.)**
- **The gunner selects either day or night mode on the ISU at 12x power magnification.**
- **The access doors are opened and the safety is pushed up to F (fire).**
- **The charger handle is pulled back to charge the gun, and the access doors are closed and locked.**
- **The 7.62 button on the weapon control box is pushed.**



- **When the target is identified, the range is estimated using the stadia lines in the sight reticle.**
- **Estimated range is indexed on the range control of the ISU.**
- **The ARM-SAFE-RESET switch is pulled out and moved to ARM.**
- **The target is reacquired in the ISU and tracked using the Bradley commander's or gunner's control handle.**
- **The weapon is fired using the trigger on the Bradley commander's or gunner's control handle.**

The procedure to fire the 7.62-mm coaxial machine gun in the manual mode is:

- **Turret power and turret drive are turned ON.**
- **Turret traverse and elevation manual-power select levers are moved to the MANUAL position.**
- **The TOW manual-power select levers are moved to the POWER position.**
- **ISU is selected for day/night mode at 12x power magnification.**
- **The access doors are opened.**
- **The manual safety is pushed up to F (fire), and the charger handle is pulled back to charge the gun.**
- **The 7.62-mm button on the weapon control box is pushed.**
- **When the target is identified, the range is estimated using the stadia lines in the sight reticle.**
- **Estimated range is indexed on the range control of the ISU.**
- **The ARM-SAFE-RESET switch is pulled out and moved to ARM.**
- **The target is reacquired in the ISU and tracked using the traversing and elevation handwheels.**

- **The trigger on the machine gun is pulled manually. The bolt slams forward and the gun fires.**

The 7.62-mm coaxial machine gun also has a LO AMMO OVRD switch which is activated when the ammunition is down to 125 rounds. At this point, it is better to reload the ammunition can if the situation allows. If the gunner must continue to fire, he presses the LO AMMO OVRD button on the ammunition control box. This will allow the gunner to continue to fire until the weapon runs out of ammunition.

Target Engagement. When using the 7.62-mm coaxial machine gun, the gunner should:

- **Fire bursts of 20 to 25 rounds (4 to 5 tracers) except for suppressive fire which is between 10 to 15 rounds (2 to 3 tracers).**
- **Use the ISU for point and area targets.**
- **Engage targets out to 900 meters (tracer burnout point), or out to 1,100 meters using thermal sight.**
- **Continue to move when engaging area targets.**
- **Engage point targets on the move using stabilization.**

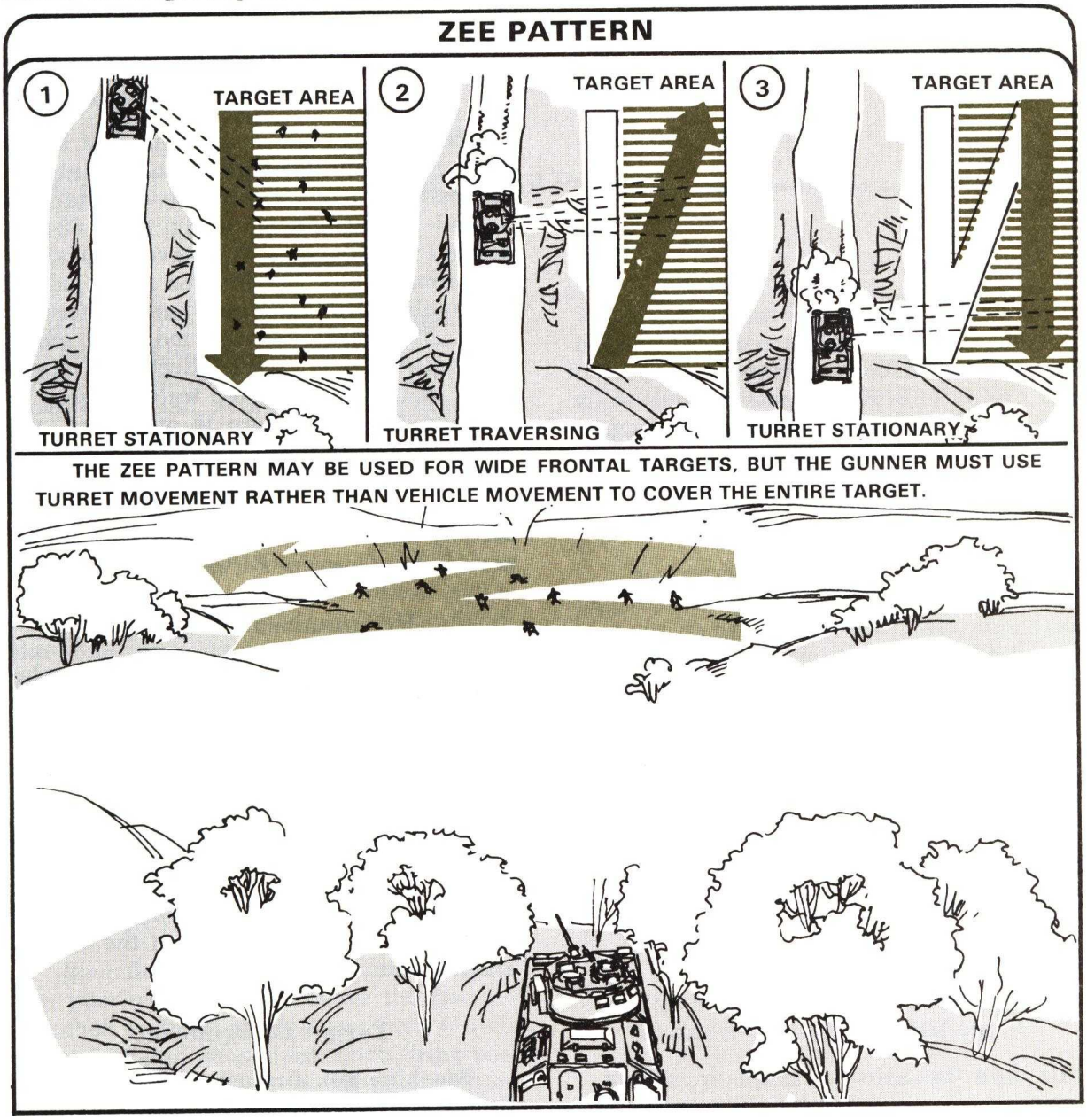
Tactical Considerations. The fighting vehicle's 7.62-mm coaxial machine gun is used against a variety of targets at ranges up to 1,100 meters. These targets are classified as either area or point. The gunner determines the method of engagement based upon the type of target.

Area Target

A ZEE pattern is used for most area targets. The gunner fires on the near edge of the target and, if the BFV is moving, he

allows the movement of the vehicle to walk the burst across the width of the target (forming the base of the ZEE). He then traverses the burst back across the target to the far edge using turret movement (middle bar of the ZEE). Finally, he uses the vehicle's movement to walk the burst across the far side of the target (top bar of the ZEE).

When stationary, the gunner or Bradley commander traverses the turret across the width of the target front. He then elevates the weapon and traverses the turret back across the target width to the rear of the target. The final bar of the ZEE would be made by traversing the turret back across the width of the target.



Point Target

The BFV can engage point targets, stationary or moving, with the 7.62-mm coaxial machine gun fired in bursts. The gunner watches the strike of the tracers and adjusts them to the point targets. This may be done when the vehicle is stationary or moving. If moving, the turret stabilization should be ON.

Suppressive Fire Engagements

Suppressive fire is used against likely enemy locations to reduce the enemy's ability to move, shoot, or see. When possible, targets should be suppressed using the 7.62-mm coaxial machine gun. This saves critical 25-mm ammunition. Suppression is not judged by number of rounds fired, but by effectiveness. The BFV coaxial machine gun's suppressive fire is usually effective in bursts of 10 to 15 rounds (2 to 3 tracers) every 10 seconds. No set pattern is prescribed, yet each burst should be within 12 meters of the target. In dense terrain (forests, urban areas, etc.), suppressive machine gun fire can be used by base-of-fire vehicles to fire around or among maneuvering BFVs and tanks.

Reconnaissance by Fire

The 7.62-mm coaxial machine gun is the best BFV weapon to use in reconnaissance by fire. Reconnaissance by fire usually causes a hidden enemy to react, either by movement or by return fire. Short bursts are fired while the squad or platoon observes for possible enemy reaction.

Special Use of the 7.62-mm Coaxial Machine Gun. Special uses of the coaxial machine gun include:

Target Designation

Machine gun fire can also be used by Bradley commanders or vehicle element

leaders to denote targets for other BFVs, tanks, forward observers, or aircraft.

Ricochet Fire

Ricochet fire will often occur during fighting on urbanized terrain. Machine gun fire can often be delivered on a target by ricocheting off buildings, walls, or streets, when the target is not vulnerable to direct machine gun fire.

SECTION III. FIRING PORT WEAPONS

GENERAL

The M231 5.56-mm firing port weapons are lightweight rifles designed to provide automatic fire from the BFV. They are mounted on ball, swivel-type mounts which allow changes in elevation and azimuth. Each BFV has six firing port weapon mounts — two on each side and two in the rear.

The firing port weapon fires 5.56-mm tracer ammunition. The ammunition load is 4,200 rounds; 2,400 rounds can be stowed in the troop compartment and 1,800 rounds loaded into 30-round magazines. One hundred percent tracers are used to assist the soldiers to adjust their fire to the target.

The firing port weapon is an area fire, suppressive weapon for close-in targets. Six men in the troop compartment man the firing port weapons. Each weapon is operated from its ball mount. The gunner observes through an adjacent vision block.

Each firing port station (4 through 9) has two pouches (sited just above the floor or attached to the seat) that can hold ten 30-round 5.56-mm magazines. Each firing port weapon operator draws his magazines from the pouches next to his station. Magazines for M16A1 rifles are carried in the load-bearing equipment ammunition pouches. If necessary, onboard stores of 5.56-mm magazines can be used for M16A1 rifles. The magazines and ammunition are interchangeable. This is rarely done, though, as the tracer mix for the firing port weapon is higher than that for the M16A1.

In emergencies, the firing port weapon can be dismounted and used as an individual weapon. Its high rate of fire (1,300 rounds per minute), lack of sights, and short barrel severely limit its effectiveness in this mode. Also, short bursts are fired to lessen the effects of recoil.

INSTALLING THE FIRING PORT WEAPONS

The procedures for installing the firing port weapon are:

- **The firing port plug lever is pulled up and the plug is pulled out.**
- **The weapon is cleared and the magazine removed.**

- **The firing port gun pin ring is pulled and the weapon is pushed into the port until the gun barrel threads mate with the firing port threads.**
- **The weapon is screwed to the right (clockwise) one full turn until the gun pin snaps into place.**
- **The weapon is checked to insure it is locked in place.**
- **The brass catcher bag is removed from the stowage clip.**
- **The brass catcher bag is placed on the receiver handle. The bag pin should mate with the hole in the handle. The bag's bottom flap is closed.**
- **The firing port vents and the vent fan are checked to make sure that they are operational. The vent should be open and the fan ON when the weapon is fired.**

TARGET ENGAGEMENT

Firing port weapons are used against a variety of targets at ranges up to 300 meters. Area targets are engaged from the stationary BFV by walking tracers into the target. Adjustment of fire is possible only if tracer ammunition is used since the gunners normally cannot see the path or strike of ball ammunition.

The firing port weapon's main role is to deliver suppressive fire. Suppressive fire is gained by firing short bursts at known or suspected enemy locations. Suppressive fire in dense terrain reduces the enemy's ability to use short-range antiarmor weapons against BFVs or their accompanying tanks.

In mounted movement, and as the BFV nears the objective, the rate of fire is increased to keep the enemy down. Rarely will the firing port weapon support dismounted friendly troops. This weapon is relatively inaccurate, it delivers only full-automatic fire, and its range is limited.

Before dismounting the BFV, the rifle team must clear all firing port weapons to prevent accidental firing while the rifle team is moving outside the vehicle. The M231 is cleared by removing the magazine, removing brass gas bag, locking the bolt to the rear, placing the weapon on SAFE, inspecting the chamber area, placing the selector switch on AUTOMATIC, and riding the bolt forward using the charging handle. Before troops dismount the BFV the ramp firing port weapons are removed. This keeps the weapons from being clogged with dirt and prevents the rifle team from tripping over the weapons as they exit the vehicle.

APPENDIX C

Fire Distribution and Control

SECTION I. INTRODUCTION

GENERAL

Battlefield survival of platoons and squads will often depend on how quickly and effectively they can fire on the enemy. Even when fighting outnumbered, platoons and squads must distribute their fires over an enemy force. To make every shot count, these fires must be controlled. Platoons must develop and use standard procedures for fire distribution and control. These procedures help quicken reaction time and reduce confusion during the first seconds of an engagement. Fire can then be redistributed as needed.

There will be times, mainly during defensive operations, when the platoon leader can direct the fires of the entire platoon. In offensive operations, this may not be the case. Prearranged methods will be necessary to rapidly place effective fire on enemy targets as they appear.

Visual control measures may be used to start and stop engagements, shift fire, and signal prearranged actions. Often, though, the speed of mechanized warfare will require that fires be controlled using the radio. Alerts and commands must be clear, accurate, and brief.

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PRINCIPLES OF FIRE CONTROL AND DISTRIBUTION

Avoid Target Overkill. As a rule, a force fighting outnumbered cannot afford to engage a single target with more than one weapon. Track commanders must strive for one-on-one engagements and one-shot kills with the TOW, and single round ranging shots and short-burst kills with the 25-mm gun. Bradley commanders must avoid engaging disabled vehicles. Such targets should be left for tanks or other weapon systems with a larger basic load of ammunition and more destructive power, or engaged after other, more dangerous targets have been destroyed.

Use Each Weapon in Its Best Role. Each BFV weapon has its own capabilities and limitations. Each should be used in roles for which it is best suited and in which it best complements the other weapons.

The 25-mm gun is best used to kill lightly armored or thin-skinned vehicles and to suppress antitank guided missiles at medium to long range. Each BFV carries 900 rounds of 25-mm ammunition to support these missions. This normally includes 300 rounds of APDS and 600 rounds of HEI-T.

The TOW is best used against armored targets — mainly tanks — that cannot be killed with the 25-mm gun. Each BFV can carry up to seven TOW missiles: two missiles in the launcher and five missiles stowed inside the BFV. (TOW missiles and Dragon missiles use the same stowage space. If two Dragon missiles are carried, there is internal space for only three TOW missiles.)

The 7.62-mm coaxial machine gun is best used to destroy light vehicles, to kill dismounted infantry, and to suppress enemy gunners out to 1,100 meters. Each BFV has a large onboard load of 7.62-mm ammunition. It should be used against suitable targets to complement the 25-mm gun at shorter ranges. This helps conserve the 25-mm ammunition.

Concentrate on Long-Range Targets. The rifle team weapons also complement the BFV's weapons. The M60 machine gun, squad automatic weapons, rifles, grenade launcher, and Dragon are best used along more-restrictive approaches where fields of fire are limited. This frees the BFV to concentrate on long-range targets.

Engage Only Targets That Offer a High Probability of Hit. BFV gunners must avoid firing at targets that are out of range or that will probably not be hit by a first round. Random firing at such targets wastes missiles and ammunition and risks exposing BFV firing positions to enemy fire.

Take the Best Shots and Expose Only Those BFVs Actually Needed to Fire. If all BFVs in position are not needed to engage a target or group of targets, only those in the most favorable positions should fire. The others should stay concealed. If one BFV has a frontal shot and another a flank shot at the same target, then the BFV with the flank shot should engage the target. The flank shot is best because it improves the chance of killing the target and reduces the chance that the target will detect and fire on the BFV.

Destroy the Most-Dangerous Targets First. The danger an enemy vehicle or weapon system presents to the squad or platoon changes with range, terrain, and the weapons mounted on the vehicle. Generally, tanks present the greatest threat to BFVs at ranges to 2,000 meters. At ranges of more than 2,000 meters, a BRDM or a BMP firing an ATGM presents a greater threat. A BMP that is moving does not present a meaningful threat until it moves within 1,000 meters. Targets should be engaged in direct relation to the danger they present. If two or more

targets are equal threats, the closest one should be engaged first.

Maintain Combat Loads as Long as Possible. Ammunition resupply will be a major problem on the battlefield. Without proper fire discipline, a BFV can use its entire combat load in one or two engagements and then be ineffective in later encounters. BFV personnel must constantly check the on-board supply of ammunition. Ammunition reporting procedures should be established as SOP. The platoon leader should prescribe how low on ammunition the platoon or squad can get before requesting resupply. A BFV should not be allowed to drop below this level except in a combat emergency. To cut reloading time, the ammunition in the ready racks should be replaced at every chance. If all the ammunition in the ready racks is used up, it will take much longer to reload the weapon.

STANDING OPERATING PROCEDURE

Well-rehearsed platoon battle drills and SOPs insure fast reaction times. Area coverage responsibilities, turret orientation, and weapons-ready postures for different situations, such as road marches, halts, and various battle drills, should be in the SOP. Battalion or company SOPs should prescribe the combat load of ammunition by amount and type. The platoon SOP should prescribe the weapons-ready posture. For example, against a multiple threat, two BFVs may be prepared to fire APDS; a third BFV, high explosive; and a fourth BFV, the TOW. Thus, the platoon is ready to engage various targets with the weapon best suited for each target — for example, to engage BMPs with APDS, to suppress ATGMs at long range with HE, and to engage tanks with the TOW. The weapons-ready posture may have to be adjusted or ammunition redistributed after an engagement to make sure BFVs are not too low on the type of ammunition or missiles needed.

SECTION II. FIRE PLANNING MEASURES

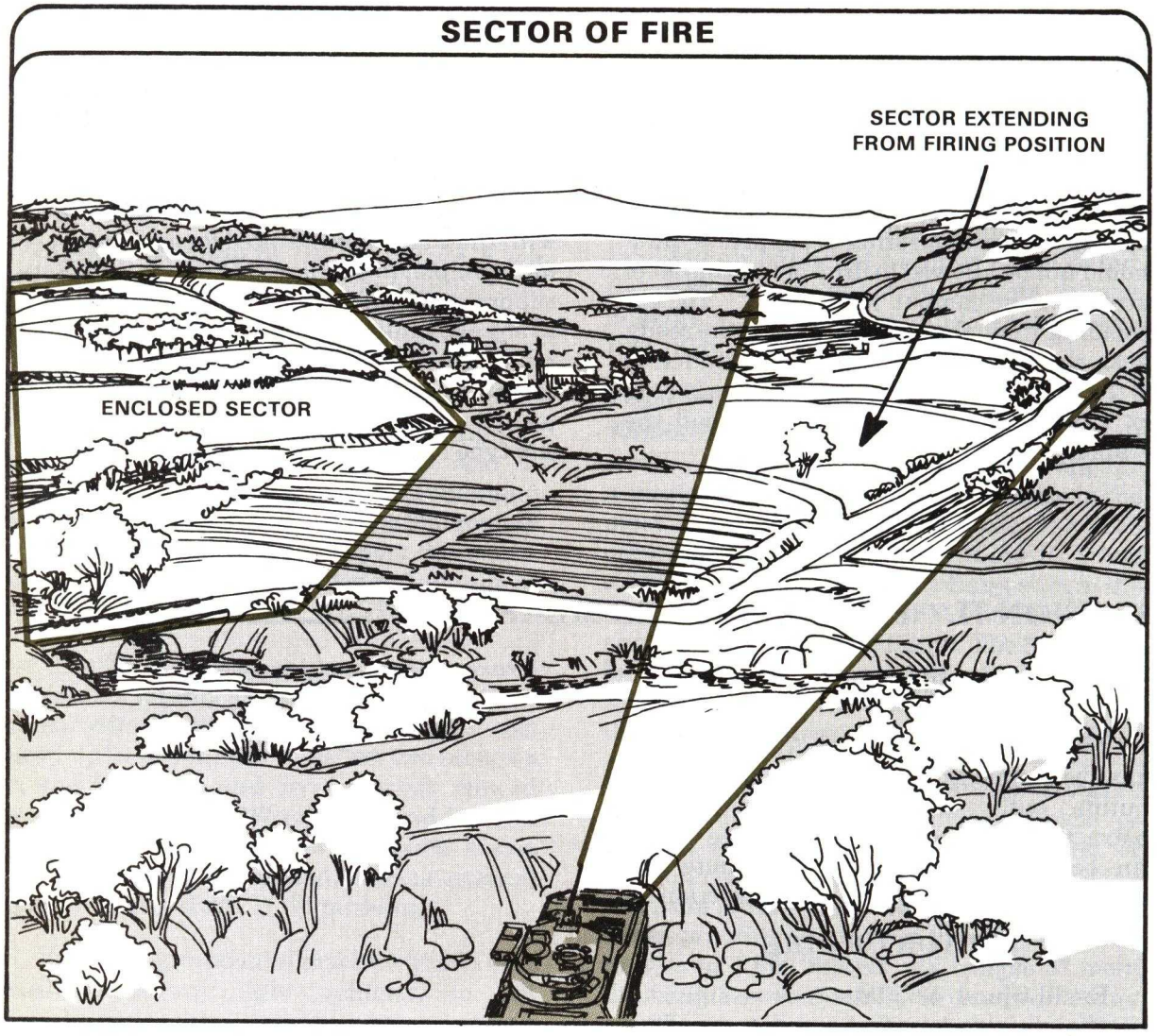
GENERAL

Fire control and distribution measures must be simple and clear. Their use must be routine, with no need for long, detailed instructions. Some simple measures which can be used to effectively distribute and control fires are described in this section.

SECTOR OF FIRE

Each squad or platoon is assigned a specific, clearly identified area to cover. This area, called a **sector of fire,** is designated by pointing out prominent terrain features, such as roads, streams, hills, or ridgelines, that outline the sector.

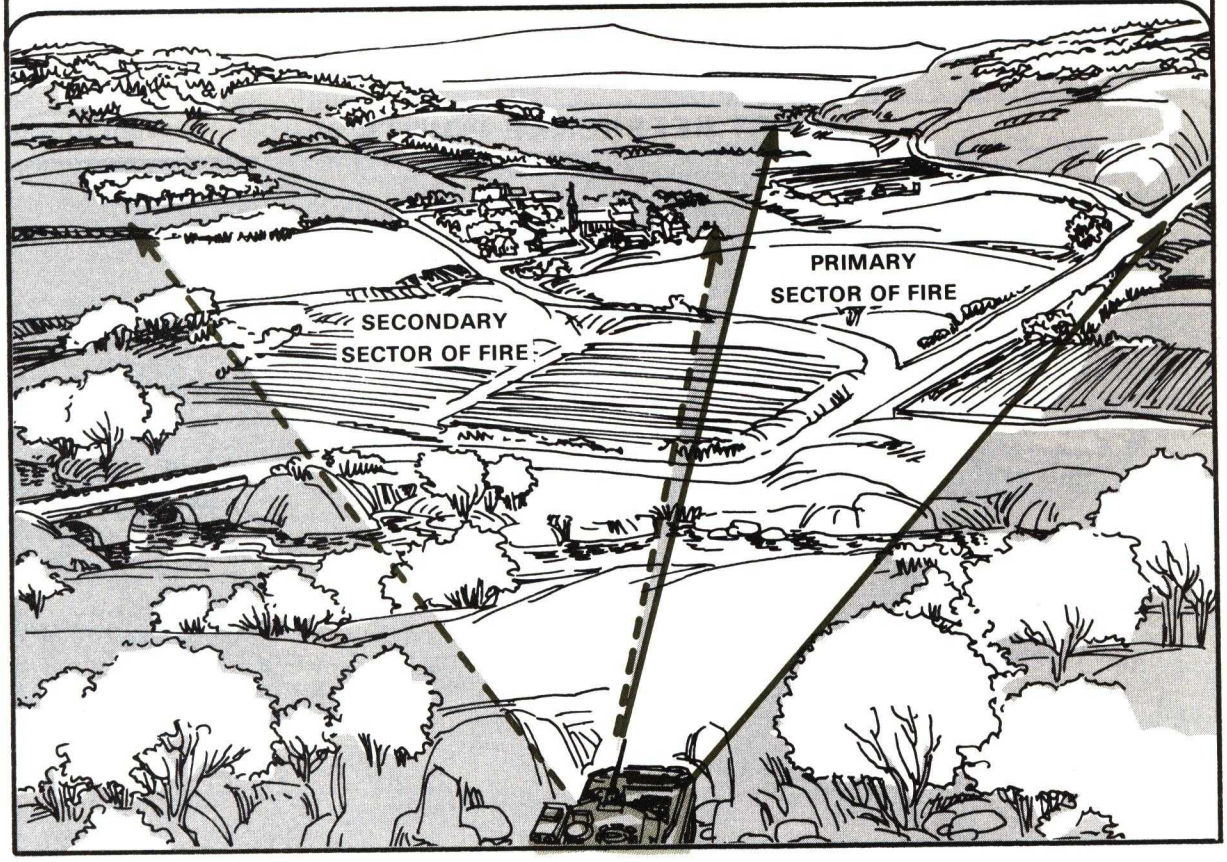
Each sector of fire can extend from a firing position to the maximum engagement range of the weapons on the BFV, or it can be an enclosed area at a distance from the firing position. If a weapon is assigned an enclosed sector, the terrain between the sector of fire and the firing position must be covered by other weapons, such as those of a tank or rifle team.



The terrain and the number and type of weapons available to cover an area will dictate how sectors of fire are assigned. They should be assigned so that an area is

completely covered with the proper type of fire, and so that mutual support is established between each vehicle. To increase the ability of BFVs to concentrate fires in a certain area and to gain mutual support, each squad vehicle is assigned a primary and a secondary sector of fire. The secondary sector of fire should correspond to another squad's primary sector of fire to get mutual support.

PRIMARY AND SECONDARY SECTORS OF FIRE



Fire is shifted to the secondary sector, on order, when there are no targets in the primary sector or when needed to cover another squad if that squad is forced to move to an alternate position or is out of action to reload its weapons.

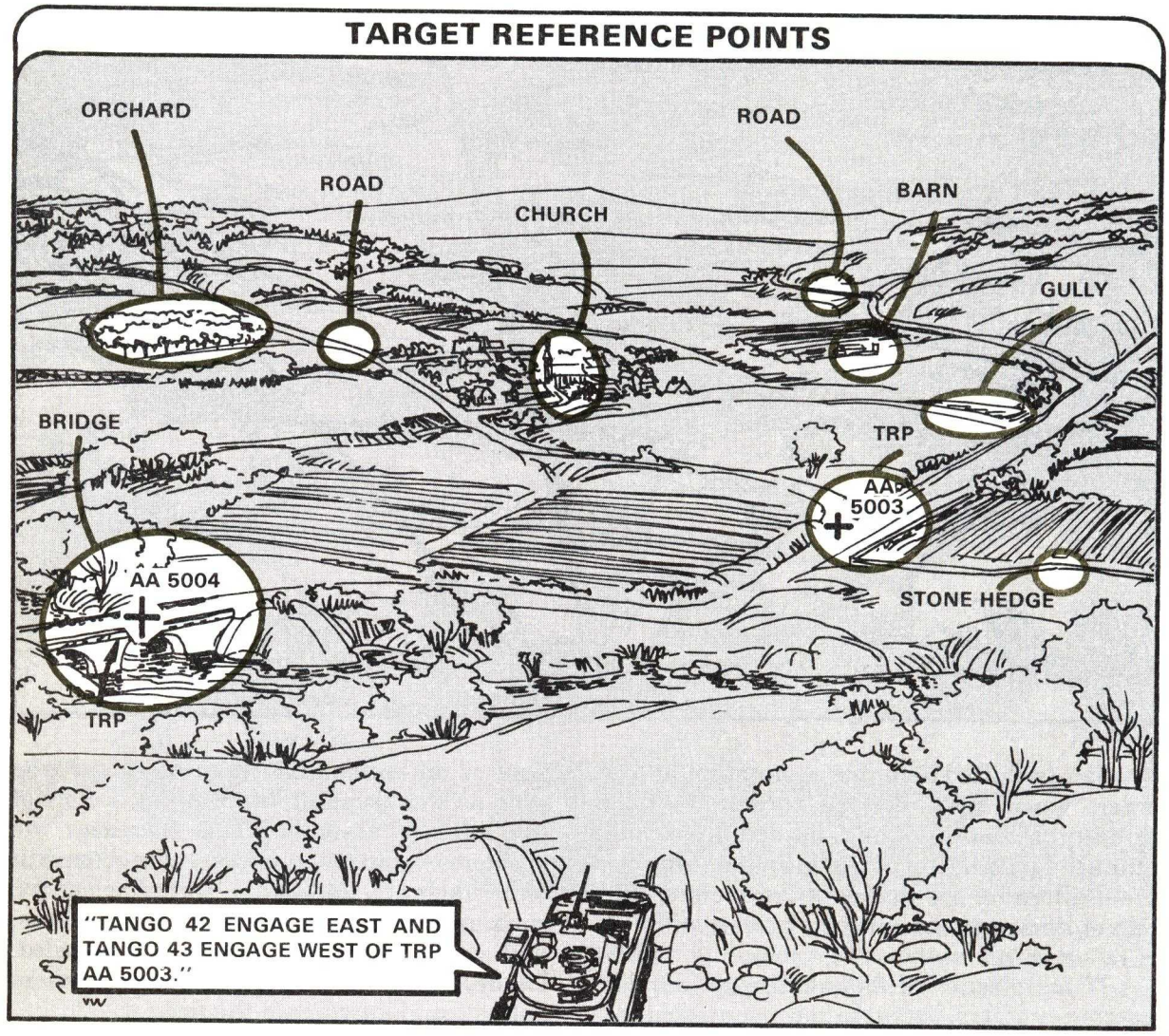
If an avenue of mounted approach is narrow, or if it is desirable to concentrate the fires of an entire platoon in a critical area such as a chokepoint, overlapping sectors of fire can be assigned. This increases the problem of control and makes target overkill more likely. So additional control measures, such as engagement priorities, fire patterns, and target reference points, are needed. Leaders must select positions that let them observe and coordinate the fire.

TARGET REFERENCE POINT

A TRP is used to designate targets of opportunity, shift fire, or assign sectors of fire.

In the defense, TRPs are chosen for BFVs along avenues of mounted approach. In the offense, they are selected on likely enemy positions or on easily seen terrain features. Only those TRPs critically needed to distribute and control fire should be designated. Having too many can confuse gunners.

Each TRP is given an identification number by the platoon forward observer. The number consists of two letters and four numbers — for example, AB5010. These identification numbers are placed in the remarks section of the platoon fire plan for easy reference and coordination. To simplify fire commands, TRPs may be referred to by the last three digits. For example, TRP AB5010 may be called TRP 010.



PHASE LINES

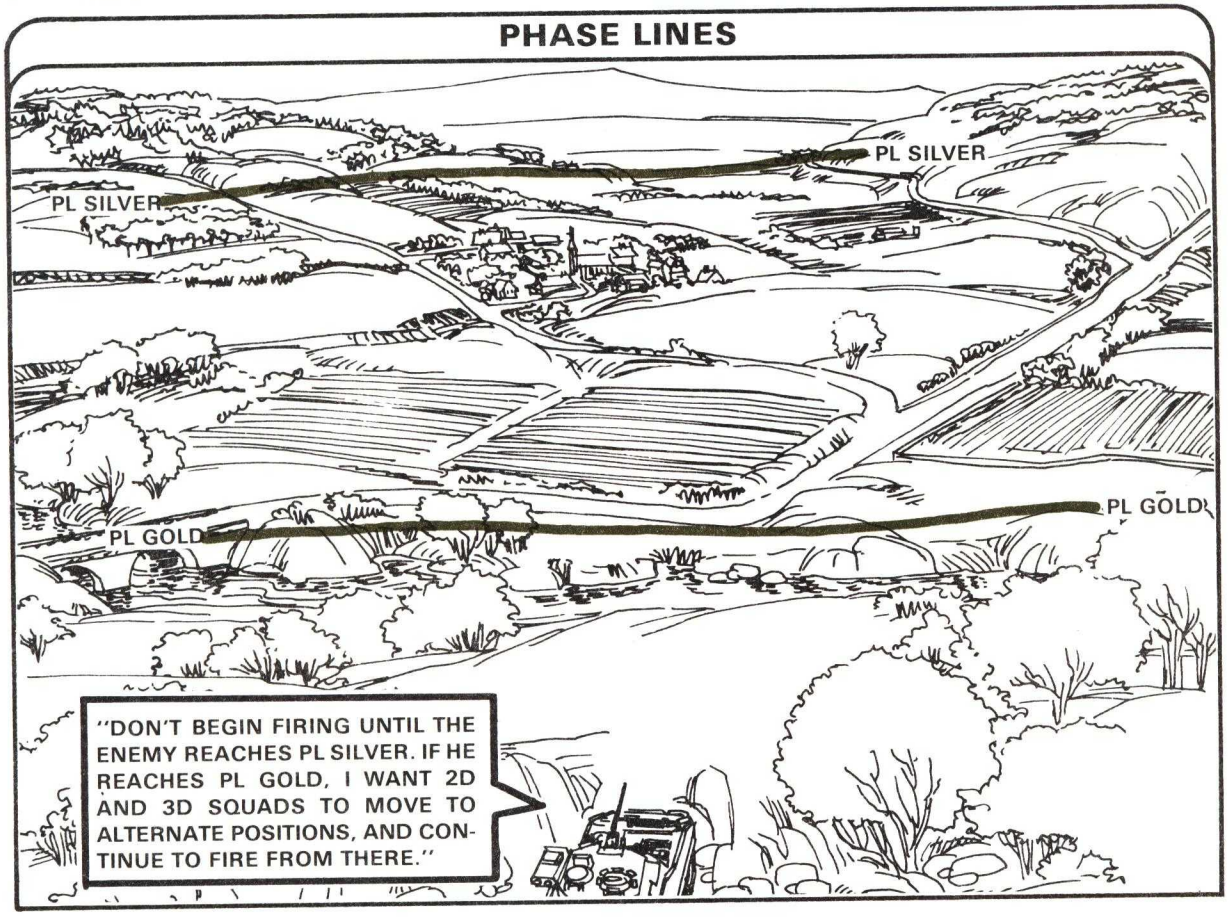
A phase line is a linear control measure normally used to control movement. It can also be used to control and distribute the fire of several widely separated BFVs. Any prominent natural or man-made linear terrain feature — for example, a ridgeline, river or stream, road, or railroad track — can be used as a phase line.

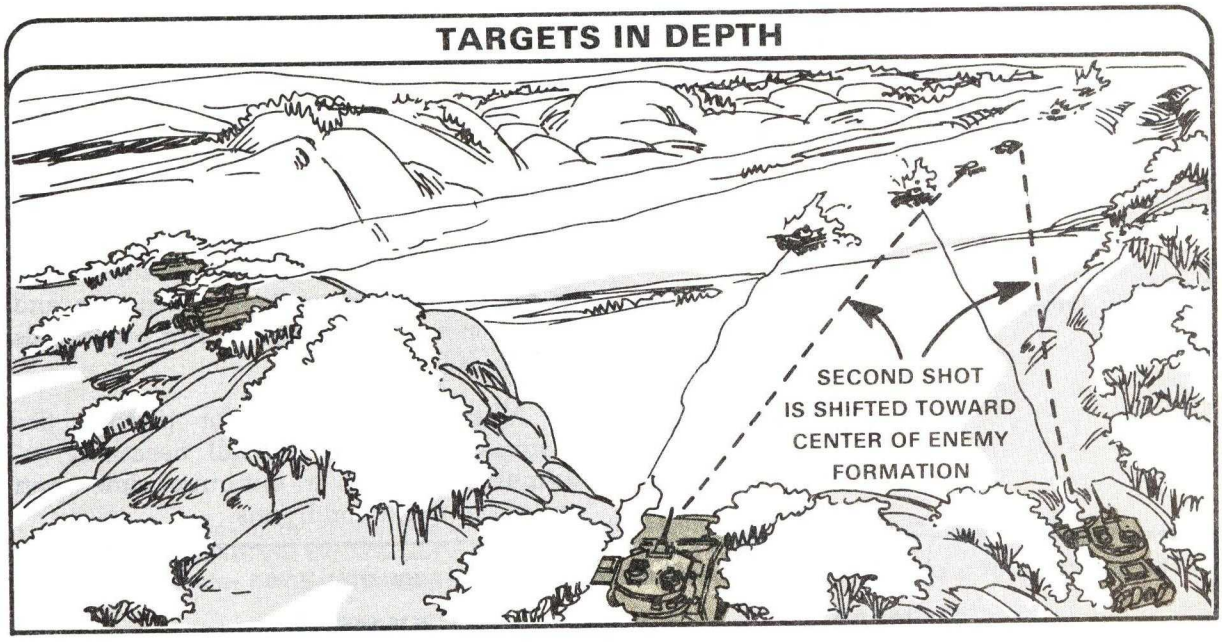
In either offensive or defensive operations, phase lines can be used to simultaneously start or stop firing, shift fire to another sector, or indicate when BFVs are to move to alternate or supplementary positions.

In the illustration, the platoon leader used phase lines to indicate to his squads when to fire and when to displace to an alternate position.

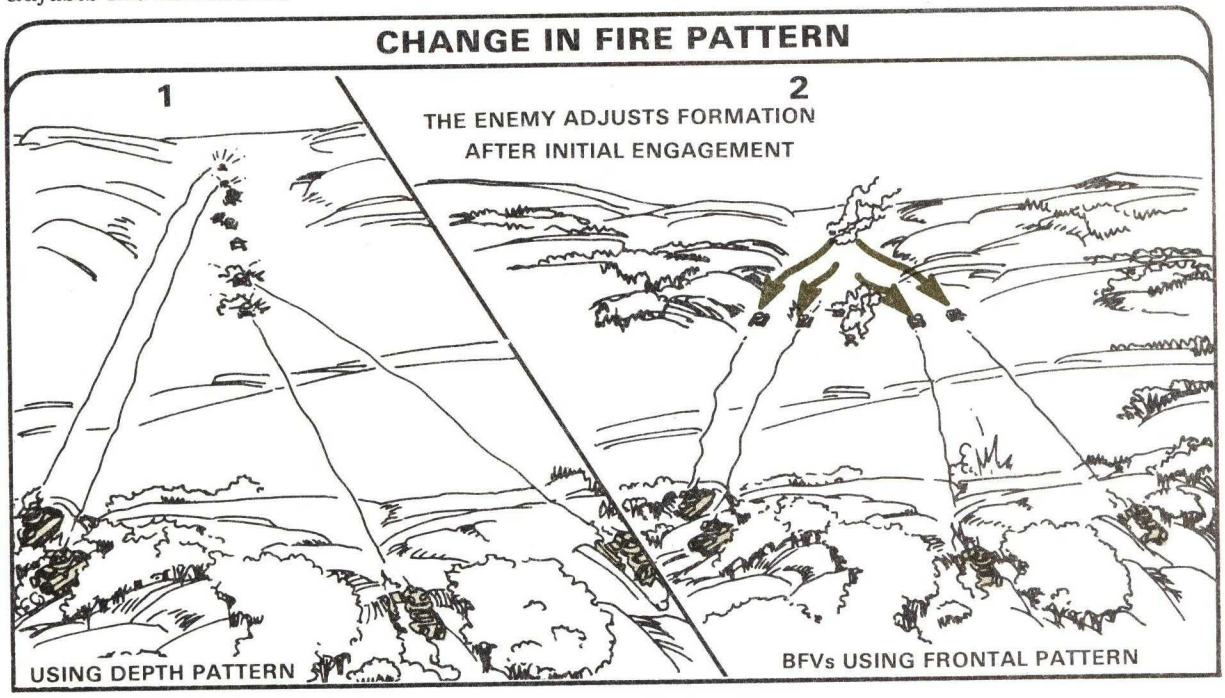
Phase lines can also be used to specify when target priorities are to change. For example, "I WANT ALL SQUADS TO ENGAGE ONLY TANKS WITH TOWs UNTIL THE ENEMY REACHES PHASE LINE SILVER. WHEN THE TANKS CROSS SILVER, THEY WILL BE IN RANGE OF THE TEAM'S ATTACHED TANKS, SO I WANT YOU THEN TO BEGIN ENGAGING BMPs WITH YOUR 25-MM GUN."

Besides being a simple and effective routine control measure, phase lines can be assigned as an emergency control measure in case radio communications are jammed.


PHASE LINES
PL SILVER
PL SILVER
PL GOLD
PL GOLD
"DON'T BEGIN FIRING UNTIL THE ENEMY REACHES PL SILVER. IF HE REACHES PL GOLD, I WANT 2D AND 3D SQUADS TO MOVE TO ALTERNATE POSITIONS, AND CONTINUE TO FIRE FROM THERE."



Fire patterns are changed or used concurrently with another fire pattern when necessary to insure maximum coverage of an enemy formation. This may be necessary when the enemy, after being engaged, adjusts his formation.



SECTION IV. FIRE COMMANDS

GENERAL

When engaging enemy targets, speed and accuracy are vital, so commands must be clear and concise. In the stress of battle, a platoon leader or Bradley commander must be able to quickly analyze a situation and issue concise and complete fire commands without delay.

A standard format for platoon fire commands insures that all necessary information is given in minimum time, even under the worst conditions.

The elements of a platoon fire command issued in proper sequence are:

ELEMENT	EXAMPLE
ALERT	"TANGO FOUR ONE - THIS IS TANGO FOUR ZERO"
WEAPON/AMMUNITION	"TOW" (or "COAX" or "HE/AP")
DESCRIPTION	"FOUR TANKS AND THREE BMPs"
LOCATION	"EAST OF TRP 004"
CONTROL (OPTIONAL)	"DEPTH"
EXECUTION	"FIRE" or "AT MY COMMAND"

To shorten the fire command, only the type of ammunition is given to designate the 25-mm gun. Also, the SOP may specify that when the command includes "TOW," the target is tanks unless named otherwise. This simplifies the command when tanks and BMPs appear together and the platoon leader wants to engage both at the same time.

Platoons must practice using fire commands until they can issue them quickly with no misunderstanding. Bradley commanders and gunners must be conditioned to react at once when an alert is given. This is achieved only through continuous practice.

CEOI EXTRACT

A extract of sample communications-electronics operation instructions identifying the example fire commands is as follows:

	ABBREVIATED CALL SIGN
PLATOON	C5T
PLATOON LEADER	C5T40
1ST SQUAD	C5T41
2D SQUAD	C5T42
3D SQUAD	C5T43
PLATOON SERGEANT	C5T44

EXAMPLE FIRE COMMANDS

Example 1. Platoon leader's fire command to engage assaulting BMPs with all BFVs of the platoon:

ALERT — TANGO (entire platoon) — THIS IS TANGO FOUR ZERO
WEAPON/AMMUNITION — AP
DESCRIPTION — TEN BMPs
LOCATION — FRONT — 2000
CONTROL — CROSS
EXECUTION — FIRE

Example 2. Platoon leader's fire command to engage assaulting BMPs and dismounted infantry:

ALERT — TANGO — THIS IS TANGO FOUR ZERO
DESCRIPTION — BMPs AND INFANTRY
WEAPON/AMMUNITION — AP
WEAPON/AMMUNITION — TANGO FOUR TWO — COAX
LOCATION — FRONT 500
EXECUTION — FIRE

In this command, the platoon leader alerted the entire platoon, which indicated he wanted all BFVs to fire, but he specified that the 2d Squad would engage the infantry by the command, "TANGO FOUR TWO — COAX." The other BFVs would engage the BMPs with 25-mm APDS rounds.

Example 3. Platoon leader's command to continue the above engagement after the BMPs are destroyed:

ALERT — TANGO — THIS IS TANGO FOUR ZERO
WEAPON/AMMUNITION — TANGO FOUR FOUR — COAX
EXECUTION — TANGO FOUR ZERO AND FOUR ONE — CEASE FIRE

In this command, he instructed the platoon sergeant with the 3d Squad to shift fire to the infantry using the 7.62-mm coaxial machine gun, he instructed his own vehicle and the 1st Squad to cease fire, and he instructed the 2d Squad to continue engaging with the coaxial machine gun. Although the command did not mention the 2d Squad, members of that squad would continue to fire based on their last instructions.

Example 4. Platoon leader's command to break off the engagement:

ALERT — TANGO — THIS IS TANGO FOUR ZERO
EXECUTION — CEASE FIRE

Example 5. Platoon leader's fire command to engage assaulting tanks with his BFV and one other BFV:

ALERT — TANGO FOUR ONE — THIS IS TANGO FOUR ZERO
DESCRIPTION — TWO TANKS
LOCATION — TRP 003 — 2800
CONTROL — CROSS
EXECUTION — FIRE

Because the targets are tanks, the 1st Squad leader would know that he was to engage with the TOW, even though the TOW is not mentioned in the fire command.

Example 6. Platoon sergeant initiating target engagement:

ALERT — TANGO FOUR TWO — THIS IS TANGO FOUR FOUR
WEAPON/AMMUNITION — AP
DESCRIPTION — TWO BRDMs
LOCATION — LEFT FRONT — 1500
CONTROL — CROSS
EXECUTION — FIRE

SECTION V. PLATOON FIRE PLANNING

GENERAL

Platoon fire planning, a part of the platoon leader's troop leading procedures, starts as soon as the platoon leader gets a mission. Once begun, fire planning continues until the platoon mission is accomplished. Fire planning's primary goal is to prescribe how fire is to be distributed and controlled to best support the scheme of maneuver. The platoon fire plan furnishes the platoon leader information needed to distribute and control the fire of all available weapons.

SECTION FIRE CONTROL

While mounted, fire control may be facilitated by using one of three methods of section fire control.

Simultaneous Fire. This is when both vehicles of a section are firing into their assigned sectors at the same time. This technique is used when moving unprotected or when surprised by many enemy vehicles, requiring immediate massed fires.

Observed Fire. This occurs when the firing vehicle of a section engages targets while his wingman observes the effects of the fire and helps to spot and call fire corrections. The wingman or nonfiring vehicle also has the mission of local security while the firing vehicle concentrates on the engagement area. In the event of a weapons malfunction or low ammunition situation, the wingman immediately assumes firing duties. Observed fire can also be used when one vehicle has a target in his assigned sector of fire and the wingman does not. This technique is normally used when BFVs are in protected defensive positions and firing at or near maximum range.

Alternating Fires. These can be used in several situations. In the defense, continuous fire from the same location will soon give the enemy a fix on the position. Alternating fires allow one vehicle to shift firing positions while the other engages targets. This method provides constant fire into the engagement area while hindering the enemy's attempts to acquire and suppress firing vehicles. At extended ranges (2,500 meters or more) the pair can alternate firing and observing until both are satisfied they are delivering effective fire. At this point, simultaneous fires can be employed.

DEFENSIVE FIRE PLANNING

Defensive fire planning is normally deliberate and detailed because more time will be available to consider:

- **Individual BFV targets.**
- **Platoon targets.**
- **Indirect fire targets.**
- **Fire distribution and control measures.**

To develop a defensive fire plan, the platoon leader assigns a primary and one or more alternate firing positions to each squad BFV, and assigns each a sector of fire. He also designates platoon point or area targets and other control measures, such as TRPs, engagement areas, or target priorities, to coordinate the fire when more than one vehicle is firing into the same engagement area or sector.

The platoon leader gets target information from squad leaders (normally provided

on sector sketches and individual weapon range cards). He reviews this target information to insure that fire is equally distributed across the entire platoon sector and that sufficient control measures are established.

When the platoon leader completes the platoon fire plan, he gives a copy of the platoon sector sketch to the company/company team commander and, if time is available, he has each squad leader make a copy of the sector sketch. (If time is short, he may only be able to give the squad leader a quick briefing on the sector sketch.)

OFFENSIVE FIRE PLANNING

In offensive fire planning, it is normally not possible to plan fire in the same detail as in defensive fire planning. The platoon leader will have to rely more on fire commands and prearranged SOP signals to rapidly bring effective fire on enemy targets.

Offensive action does, though, require planning. A platoon leader must plan how he will engage known or suspected enemy targets, where suppressive fire may be needed, and how he will control platoon fires against both planned targets and targets of opportunity.

OFFENSIVE FIRE DISTRIBUTION AND CONTROL MEASURES

"For this operation, we will move initially using bounding overwatch on successive positions. My vehicle and the 1st Squad will act as the overwatch element. The 1st Squad will be prepared to provide immediate suppressive fire, with the 25-mm gun using HEI-T, or with the COAX. My vehicle will be prepared to provide tank-killing fire with the TOW. The overwatch element will initiate fire immediately if a target is detected, and alert the bounding force as to the type of target and its location. The bounding force will suppress targets as necessary using the 25-mm gun with HEI-T or the COAX to cover their movement across exposed areas. I have designated TRPs throughout our sector near likely enemy locations and possible enemy avenues of approach. Weapons should be oriented on these TRPs as we move. When surprise targets appear, the first vehicle to see the target will engage it immediately, and other vehicles that can see the target will join the engagement. Are there any questions?"

SECTION VI. BFV RANGE CARD

GENERAL

A range card is a rough sketch of terrain that a weapon is assigned to cover. It shows possible target areas and terrain features plotted in relation to a firing position. The information is used to plan and control fire, to detect and engage targets, and to orient replacement personnel or units.

PREPARING A RANGE CARD

Each BFV gunner normally prepares range cards for his BFV. He prepares one for each primary, alternate, and supplementary position designated in the defense and for any static position when enemy contact is possible, such as a position in an assembly area.

Each range card has at least the following information:

- **The symbol for the weapon covering the sector.**
- **The azimuth (degrees) and distance (meters) of the firing position from an easily recognizable terrain feature. (This serves as an easy reference to locate the firing position.) If there is no recognizable terrain feature, an eight-digit grid may be used.**
- **The boundaries of the area assigned to be covered by observation and fire.**
- **Areas where targets are likely to appear (engagement areas) and the range, azimuth, and elevation to them from the firing position.**
- **Dead space, that is, areas that cannot be observed or covered by fire.**
- **The direction.**
- **Identification data:**
  1. **Unit designation (no higher than company/troop).**
  2. **Time and date of preparation.**
  3. **Firing position (primary, alternate, or supplementary).**
  4. **Magnetic north arrow.**

Depending on the priority of work established, and once the Bradley commander tells him the sector of fire and other required information, the gunner prepares a range card as soon as possible after moving into a firing position. Two copies must be prepared. One is kept on the BFV, and the other is given to the platoon leader. The platoon leader uses the range cards and squad sector sketches to prepare a platoon sector sketch. A standard preprinted sheet of paper is best for drawing the range card, but anything the gunner can write on, such as a piece of notebook paper or a cardboard box, can be used.

A range card should be prepared as shown in the illustration on page C-19. A copy of DA Form 5517-R (Standard Range Card) for local reproduction is at Appendix P.

The BFV map symbol is drawn in the lower center of the range card. Show the sector of fire by drawing arrows from the vehicle symbol to the left and right limits. Sketch any easily recognizable terrain features that can be used to identify the

sector. In the data section, indicate the magnetic azimuth, deflection (taken from the azimuth indicator in the turret), and the range to the far limits of the sectors of fire.

NOTE:

The left and right limits are labeled one and two, respectively, in the sector sketch and a circle is drawn around each number. The left and right limits should be the first items drawn and labeled in the sector sketch and the data section of the range card. (The azimuth, deflection, and range are not placed on left/right limit lines.)

Place target reference points (TRPs) at the location designated by the Bradley commander, and at any other location where a target is likely to appear. Number each TRP and likely target locations in sketch section of range card.

NOTE:

Arrows are not drawn from TRPs and likely target engagements to the vehicle position.

Draw a maximum engagement line across the sector of fire for the 25-mm automatic gun, TOW, and 7.62-mm coax machine gun. These lines depict the maximum ranges at which a target can be effectively engaged.

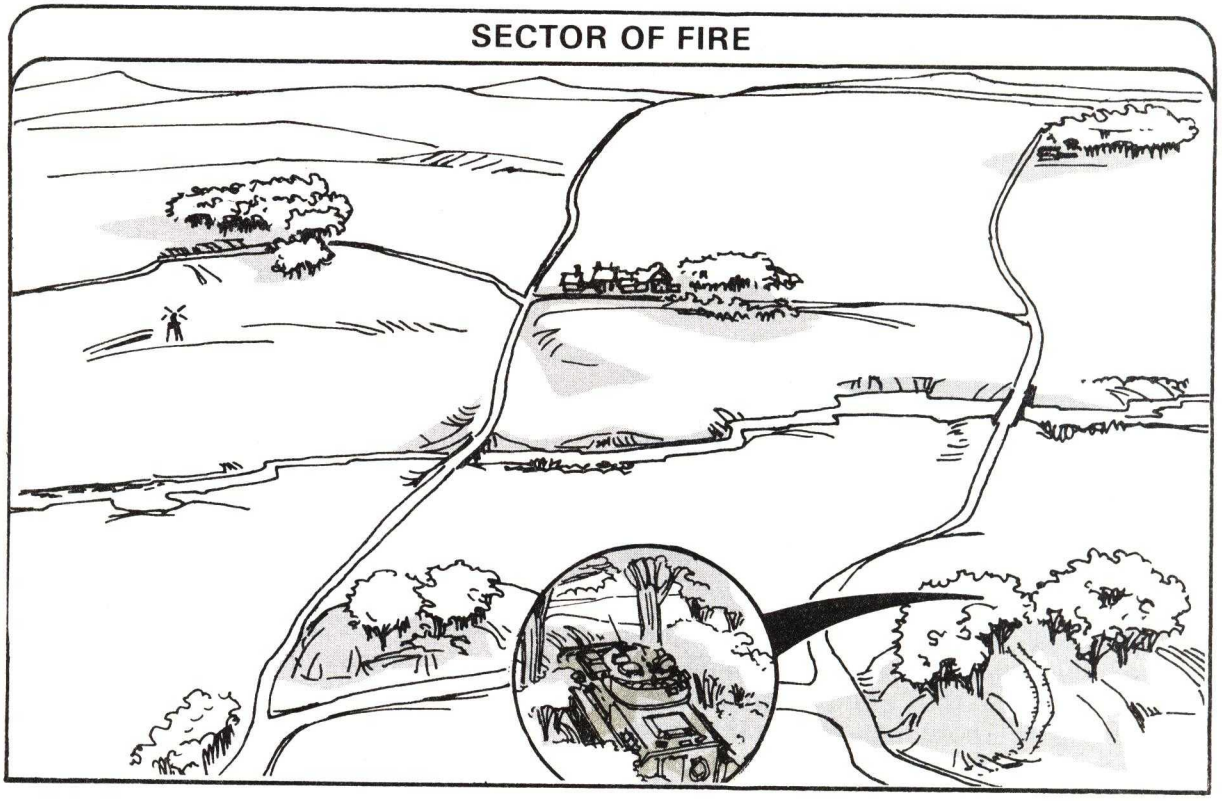
NOTE:

There may be more than one maximum engagement line for the 25-mm (HEI-T/APDS-T) and the TOW.

Show dead space or areas where targets cannot be engaged with direct fire by drawing diagonal lines across the area and writing the words dead space.

Draw a magnetic north arrow on the range card to orient it with the terrain. Then, add identification data — unit designation (no higher than company/troop level), time and date of preparation, and type of position (primary, alternate, or supplementary).

Enter the information for the weapon reference point in the remarks block on the range card.



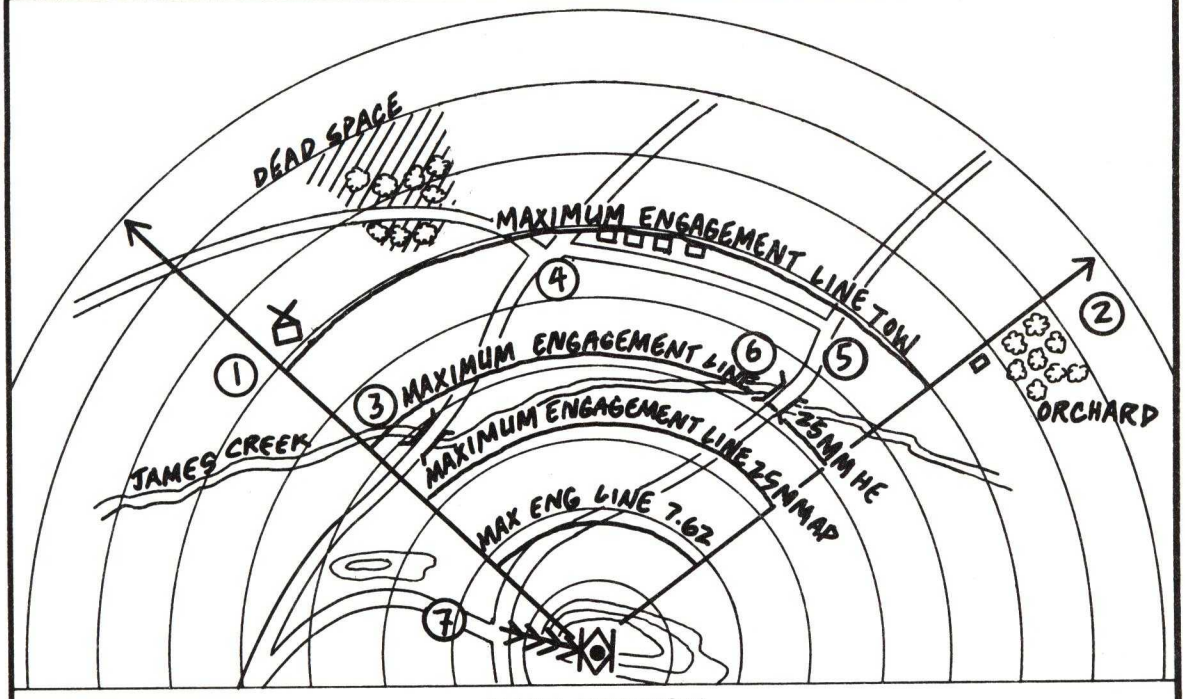
STANDARD RANGE CARD

For use of this form see FM 7-7J. The proponent agency is TRADOC.

SQD 1
PLT 2
CO B

May be used for all types of direct fire weapons.

MAGNETIC NORTH



DATA SECTION

POSITION IDENTIFICATION: PRIMARY

DATE: 24 OCT 85 1350 HR

WEAPON: BFV M2

EACH CIRCLE EQUALS METERS: 500

NO.	DIRECTION/ DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
1	305°/5420 mils	+10	3100 M		L/L WINDMILL
2	52°/0920 mils	+10	2500M		R/L ORCHARD
3	5440 mils	-8	1400M	AP	BRIDGE
4	5830 mils	+5	2600M	TOW	RJAA1041
5	0220 mils	-3	2600M	TOW	RJAA1040
6	0240 mils	+2	2200M	HE	BRIDGE

REMARKS:

7 WPN REF POINT AZ° RANGE 650 M

DA FORM 5517-R, FEB 86

MARKING A FIRING POSITION

After a firing position range card has been completed, the position should be marked with ground stakes. This enables the same BFV or a BFV from a relief unit to reoccupy the firing position and use the data from the prepared range card for the position.

Staking the Position. Once the position range card is completed, the position should be staked before the vehicle is moved to any hide position or to an alternate or supplementary position. Three stakes are needed to mark the position, as shown in the illustration.

One stake, centered on the driver's station and touching the hull, is placed in front of the vehicle. This stake should be long enough so that the driver can see it as he moves into the position. The other two stakes are placed parallel to the left track, one lined up with the front wheel hub and one with the rear road wheels. The stakes should be placed close to the vehicle with only enough clearance to let a driver move into position without knocking them down.

The stakes should be driven deep enough in the ground so that a strong wind will not knock them down. Engineer tape or luminous tape can be placed on the friendly side of the stakes to make them easier to see during limited visibility.

Moving into Position. If the situation permits, a ground guide can be used to help the driver move the vehicle into position.

If a ground guide cannot be used, the driver moves in, parallel to the two side stakes with the front stake centered on the driver's station.

Once in position, the BFV gunner should index the range and azimuth for one of the targets on the range card. If the sight is aligned on the target, the vehicle is correctly positioned and the data from the range card can be used. If the sight is not aligned on the target, the gunner should tell the driver which way to move the vehicle to align the sight on the target. Only minor adjustments should be necessary.

APPENDIX D

Squad/Platoon Communications

SECTION I. TYPES OF COMMUNICATIONS

GENERAL

Squads and platoons must be able to communicate effectively to control and coordinate movement and fires, send and receive instructions, request logistical or fire support, and gather and distribute information.

There are many ways to communicate. Each has its own capabilities and limitations. The primary types of communications available at platoon level are visual, sound, messenger, wire, and radio. A backup means of communicating should always be planned in case the primary method fails. The means of communication chosen will depend on the situation.

VISUAL

Visual signals are the most common means of communicating in squads and platoons. Arm-and-hand signals, flags, flashlight, and pyrotechnics allow rapid transmission of messages and instructions. A

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SECTION	PAGE
I. Types of Communications	D-1
II. Radiotelephone Procedures	D-13

disadvantage is these signals may be seen by the enemy. But if the terrain is used properly, there is less chance these signals will be seen by the enemy.

Another danger is that visual signals require visual contact between the sender and the receiver, and often the signals will be misunderstood. To overcome this disadvantage, every man must be able to send, receive, and understand messages using visual signals. Squads and platoons must practice these signals every chance they get.

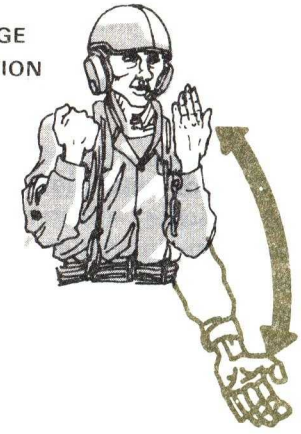
Arm-and-Hand. Arm-and-hand signals are the basic way of communicating within squads and platoons when visibility is good. It is particularly useful during periods of radio silence.

ARM-AND-HAND SIGNALS

VEHICLE CONTROL SIGNALS

STOP

CHANGE DIRECTION



HALT OR STOP

MOVE (THE VEHICLE(S)) FORWARD OR COME FORWARD

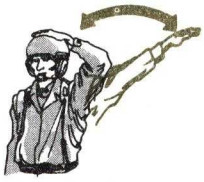
ARM-AND-HAND SIGNALS (CONTINUED)

BATTLE DRILL SIGNALS

AIR ATTACK

CONTACT RIGHT

CONTACT LEFT



BOUNDING OVERWATCH

INCREASE SPEED, DOUBLE TIME, OR RUSH

ACTION RIGHT

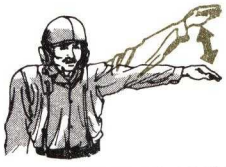
ACTION LEFT

OPEN UP (EXTEND DISTANCE BETWEEN MEN OR VEHICLES)

TRAVELING OVERWATCH

STAGGERED COLUMN

MOVE TO RIGHT



MOVE TO LEFT

TRAVELING

Flag. Flag signals are easier to see and understand at greater distances than arm-and-hand signals. Each BFV and each tank has a set of three flags — red, green, and yellow. They may be used to:

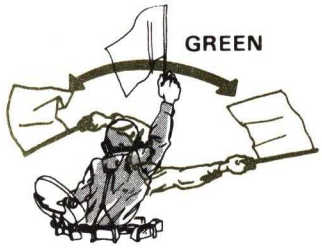
- **Control movement. Flags serve as an extension of arm-and-hand signals.**
- **Mark vehicle positions. For example, a quartering party member uses flag in an assembly area to mark vehicle positions.**
- **Identify disabled vehicles.**
- **Warn friendly elements of an advancing enemy. For example, an OP member uses a flag to signal a platoon to move to its fighting position.**

FLAG SIGNALS

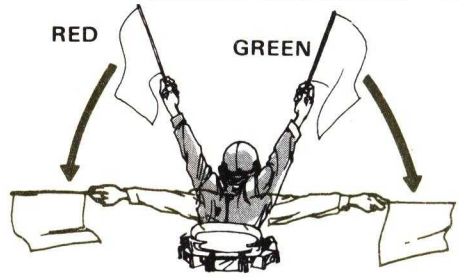
RED - DANGER, ENEMY IN SIGHT

GREEN - READY, ALL CLEAR, UNDERSTOOD

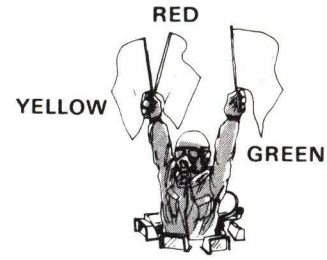
YELLOW - DISREGARD, VEHICLE OUT OF ACTION



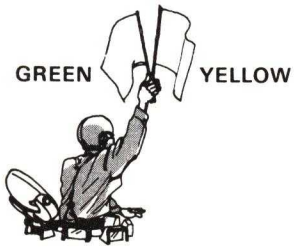
MOVE OUT



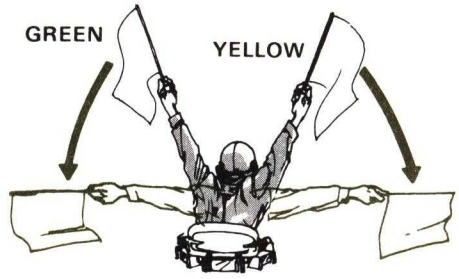
DISMOUNT AND ASSAULT



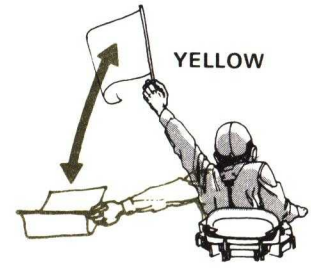
NBC HAZARD PRESENT



ASSEMBLE OR CLOSE

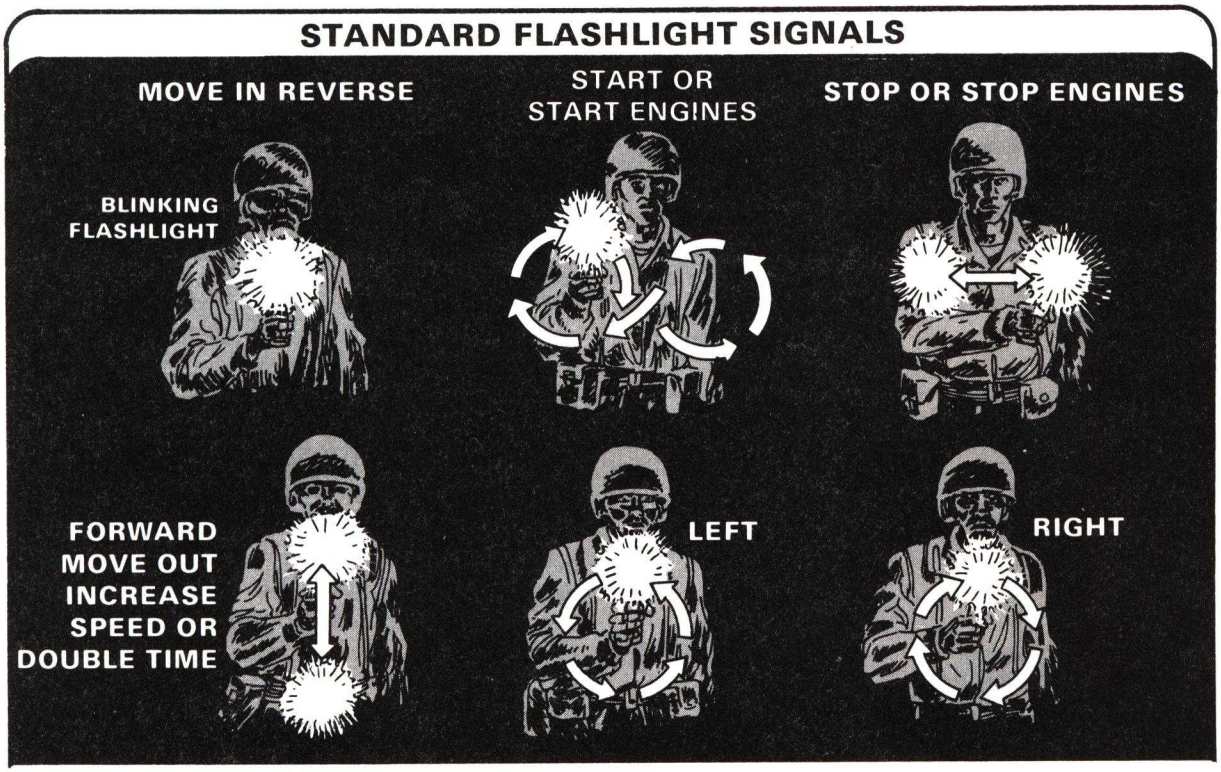


DISMOUNT



MOUNT

Flashlight. Flashlight signals are used mainly for communicating during darkness. For identification, each squad or platoon may use a differently colored filter.



Pyrotechnics. Pyrotechnics can be used as signals at any time. In daylight, and in conditions of limited visibility such as fog, rain, or falling snow, they are less effective. Pyrotechnic signals are usually prescribed in the communications-electronics operation instructions. Squads and platoons are not to improvise and use their own pyrotechnic signals. They may conflict with the CEOI and confuse other units. Pyrotechnic messages must be confirmed as soon as possible because the originator cannot be sure that the signal was seen and understood.

CAUTION

Pyrotechnic signals are easy for the enemy to intercept and imitate.

Other Signals. Mirrors, headlights, and panels are other means of visual communication but are difficult to use on the move. A complete list of each type of visual signal is in FM 21-60.

SOUND

Sound communications include such simple devices as whistles, horns, gongs, and explosives. Sound signals are used mainly to attract attention, transmit prearranged messages, and spread alarms. Sound signals work but only for short distances. Battle noises cut down the range and reliability of sound-signals. They are also open to enemy interception, so their use may be restricted for security. To avoid any misunderstanding, sound signals must be simple. They are usually prescribed by unit SOP and the CEOI.

MESSENGER

Using a messenger is a fairly secure means of communicating and usually the best way to send long messages that cannot be delivered personally by a commander. It is, though, the slowest means of sending information and is vulnerable should the messenger be delayed, captured, or killed.

Messages sent by a messenger should be clear, concise, and complete. No unnecessary words should be used. If there is a chance the messenger might be captured, the message should be in code using the operational code in the CEOI.

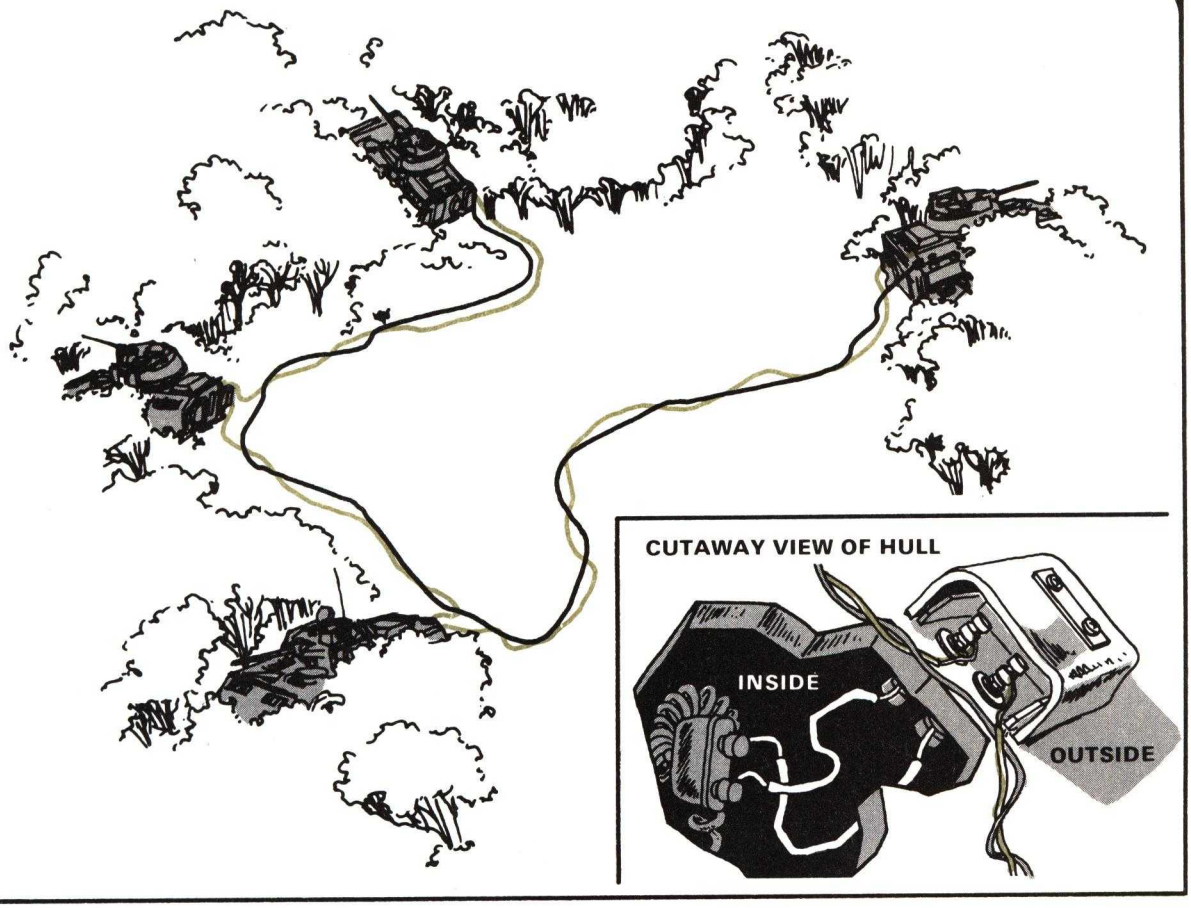
WIRE

Wire communications should be used whenever the platoon expects to stay in one

place more than an hour. When possible, the whole platoon is tied together through the use of a wire net. The wire net consists of field wire laid among fighting vehicle crews and rifle teams. All field communications wire (WD-1 and combat assault) consists of two independently insulated strands twisted together to form one wire. There are several ways the platoon wire net can be set up, depending on whether the platoon is totally mounted or partially dismounted.

Mounted. In the mounted mode, the wire is laid from vehicle to vehicle and connected to the terminals on the right rear of each vehicle. Because TA-1 telephones (which are sound powered) are being used, one strand of the wire must be cut, the insulation stripped away, and the wire ends attached to the wire terminal connectors on the right rear of the BFV. The TA-1 is connected to the terminals on the inside of the vehicle by using a short length of wire.

MOUNTED WIRE NET



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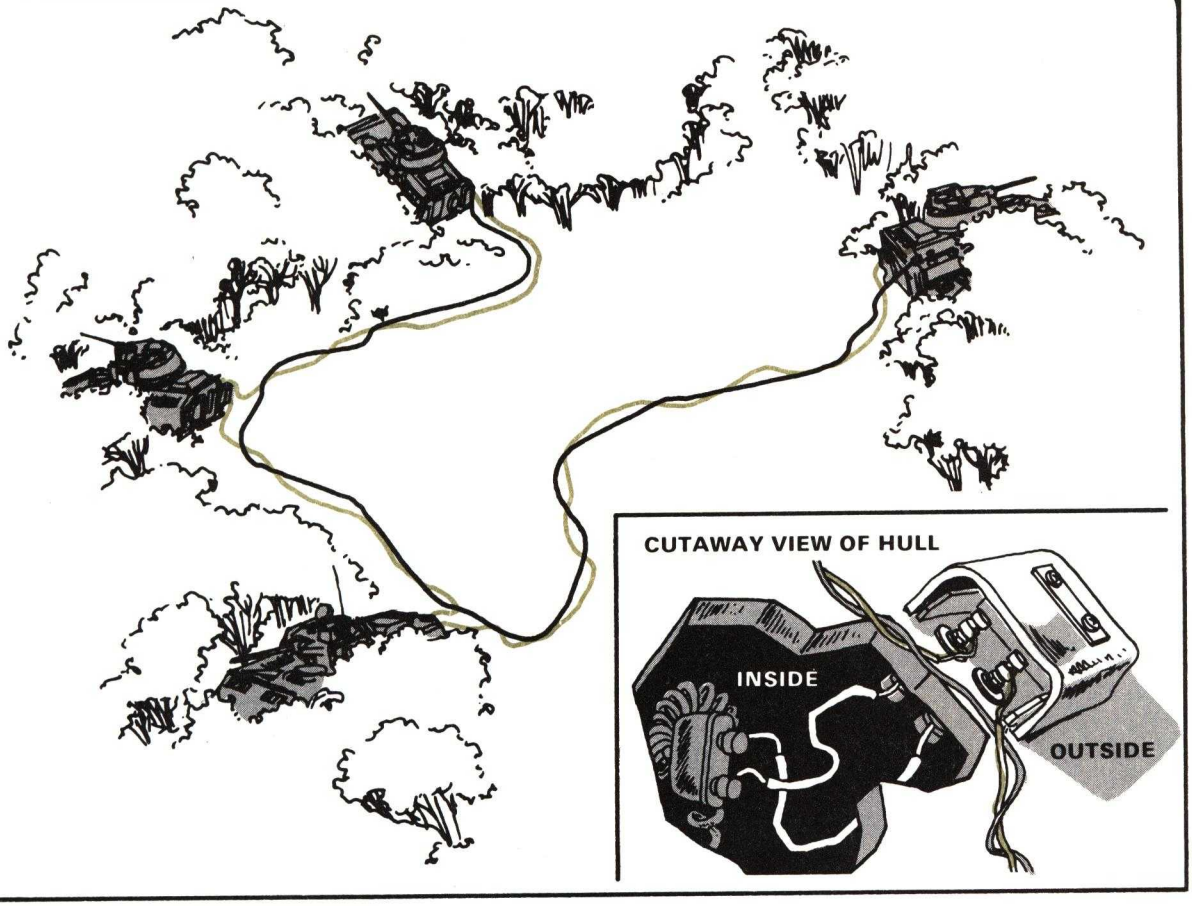
MOUNTED WIRE NET



Dismounted. In the dismounted mode, situations are of two types. In the first type, the platoon occupies one position with both the fighting vehicle element and the dismount element deployed. The wire net would be made by connecting all the platoon fighting vehicle crews and rifle teams by wire.

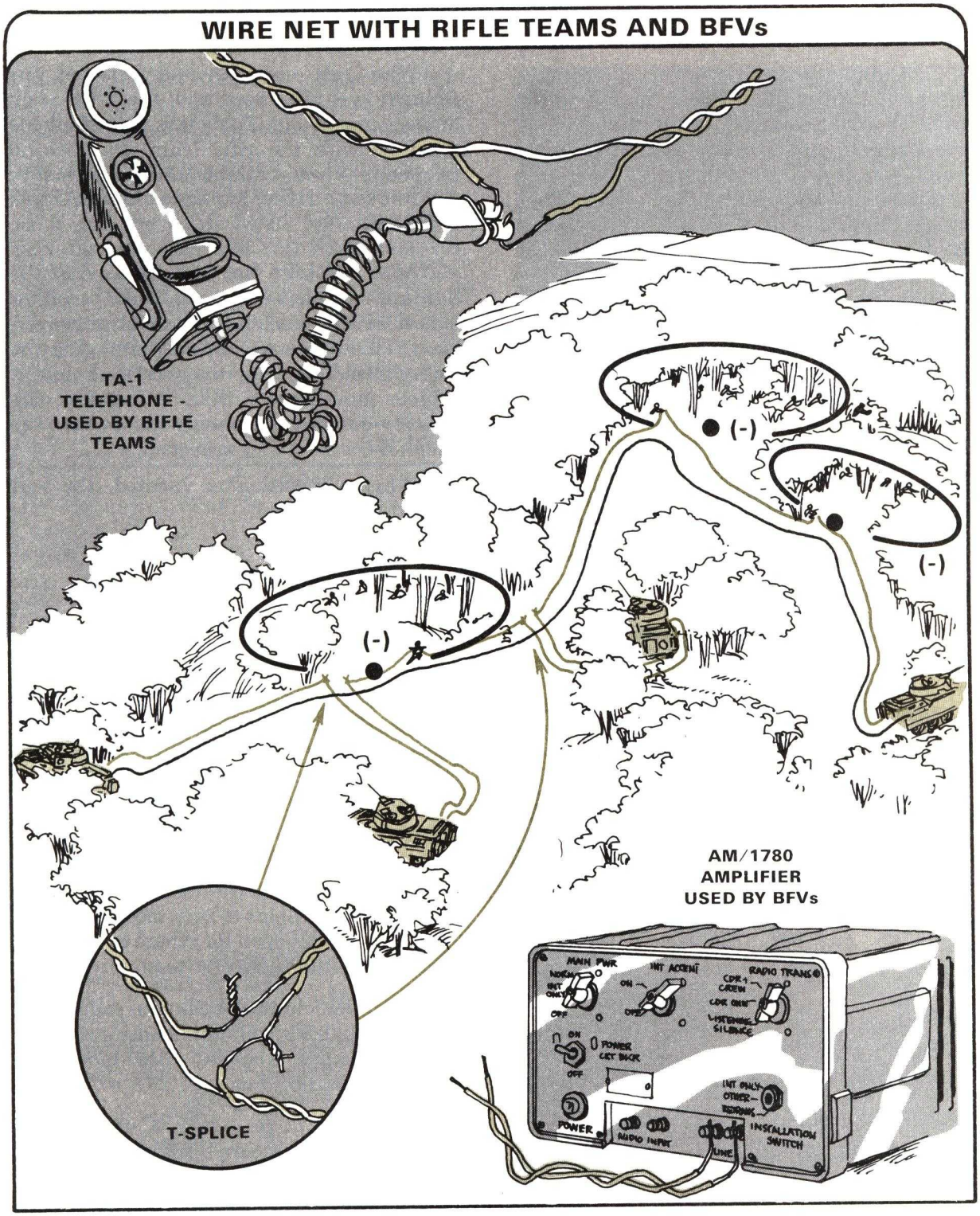
Because the rifle teams use TA-1s, one strand of the wire must be cut, the insulation stripped back, and the wires attached to the binding posts of the TA-1 to connect the rifle teams to the wire net. Because one strand of wire must be cut, the wire net is in series, which means that if the wire is broken or disconnected the whole wire net will cease to function.

The fighting vehicle crews are connected to the wire net by stripping the insulation from the end of the strands of wire and inserting the wire ends into the binding posts of the AM/1780 audio frequency amplifier.

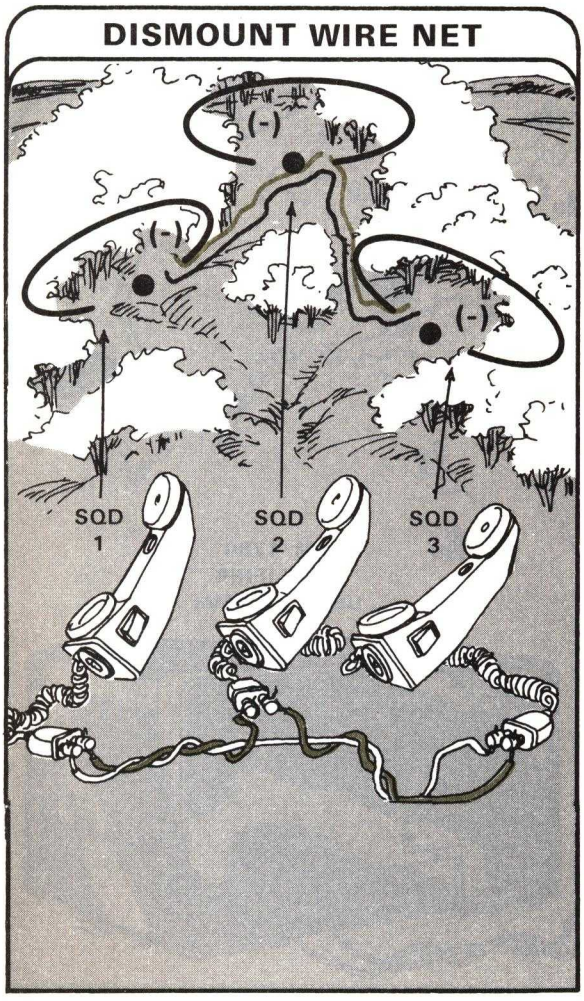
This wire would be T-spliced into the wire net by cutting one strand of the wire, stripping back the insulation from the ends, and splicing the ends to the wire from the AM/1780. This method would be used for vehicles that connect to the wire net between the ends of the wire net. If the wire net starts at a BFV, the wire would be connected to the binding posts of the AM/1780. The AM/1780 must be turned on while in the wire net. If it is turned off, the wire net will not work.

NOTE:

A communications check must be made to insure that the wire net works. The C-2298 control box must be set in the ALL position. The AM/1780 is set for normal operations. If a fighting vehicle crew cannot communicate with the rest of the teams, the strands of wire in the AM/1780 binding posts must be reversed and another check made.


WIRE NET WITH RIFLE TEAMS AND BFVs
TA-1
TELEPHONE -
USED BY RIFLE
TEAMS
(-)
(-)
(-)
T-SPLICE
AM/1780
AMPLIFIER
USED BY BFVs
MAIN PWR
INT ACCENT
RADIO TRANS
POWER
INSTALLATION
SWITCH

In the second type of dismounted situation, the rifle team is in a position different from that of the fighting vehicle crew. In this placement, the rifle teams would use their TA-1 telephones to establish a platoon hot loop among themselves. When using the TA-1, one of the wires must be cut and the insulation stripped back to connect the wire to the telephone binding posts. The telephones do not have to be on the same single wire. Only one wire needs to be cut to connect the telephone. The wire net is laid from team to team until all teams are connected to it.



Wire can also be laid between the fighting vehicle crew and the rifle team of the same squad. To do this, the telephone must be with the rifle team. If a second telephone is not available, the wires must be connected directly into the BFV's AM/1780.

After the wire has been laid to all the fighting vehicle crews, it should be either buried several inches deep or strung overhead. This prevents vehicles damaging the wire or soldiers tripping over it. Before a vehicle moves more than a few feet, the Bradley commander should insure that the telephone wire is disconnected.

When a position is vacated, the wire should be recovered.

RADIO

Because Threat forces have an extensive radio intercept capability, radio is used within the platoon only when messages cannot adequately be sent by other means. If a radio transmission is intercepted, the enemy can usually find out where a unit is and what it is doing.

When radios are used, transmissions must be short and to the point. The sender must know what he wants to say before he transmits. This helps to keep messages short and the radio net open for others to use. Also, it reduces vulnerability to enemy intercept.

Each vehicle in the platoon mounts an AN/GRC-160. The platoon leader's and platoon sergeant's vehicles also mount an AN/VRC-46.

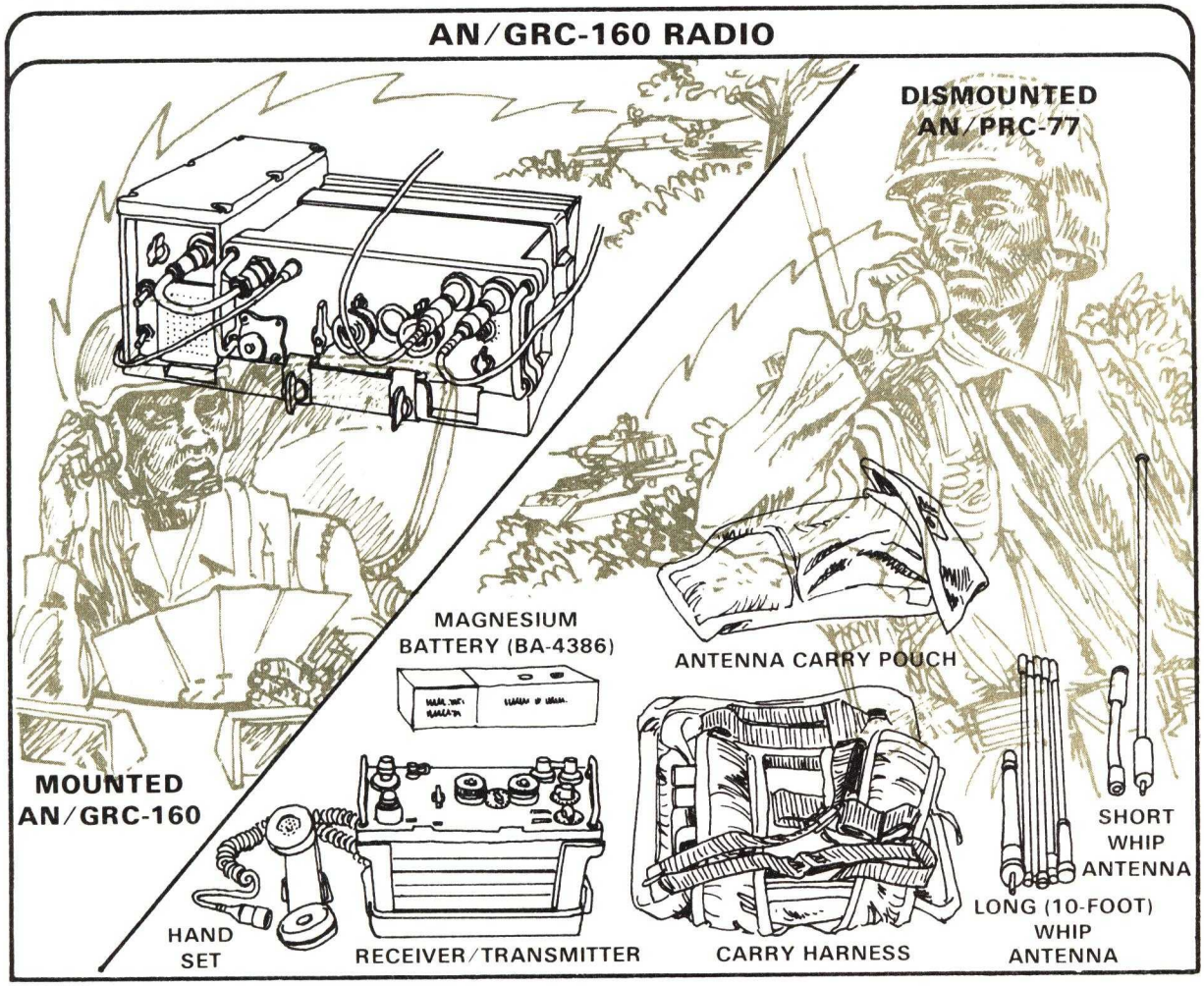
AN/VRC-46. The AN/VRC-46 radio is powered by the vehicle's electrical system. Its principal advantage is its 41-kilometer planning range. If it or any other vehicular

radio is operated when the vehicle engine is shut off, the driver must take care that the radio does not drain the batteries completely.

AN/GRC-160. The AN/GRC-160 radio can be mounted in and operated from the vehicle, or it can be dismounted and used as a portable radio (AN/PRC-77). When mounted, it is powered by the vehicle's electrical system. The planning range mounted is 12 kilometers. When it is dismounted, it is called an AN/PRC-77 and can transmit up to 8 kilometers. It is powered by its own battery (BA-4386).

NOTE:

Radio discipline must be strictly enforced because of the number of radios on the platoon net. To neutralize the enemy's intercept and radio direction finder capability, and to make command and control easier, only necessary transmissions should be made.

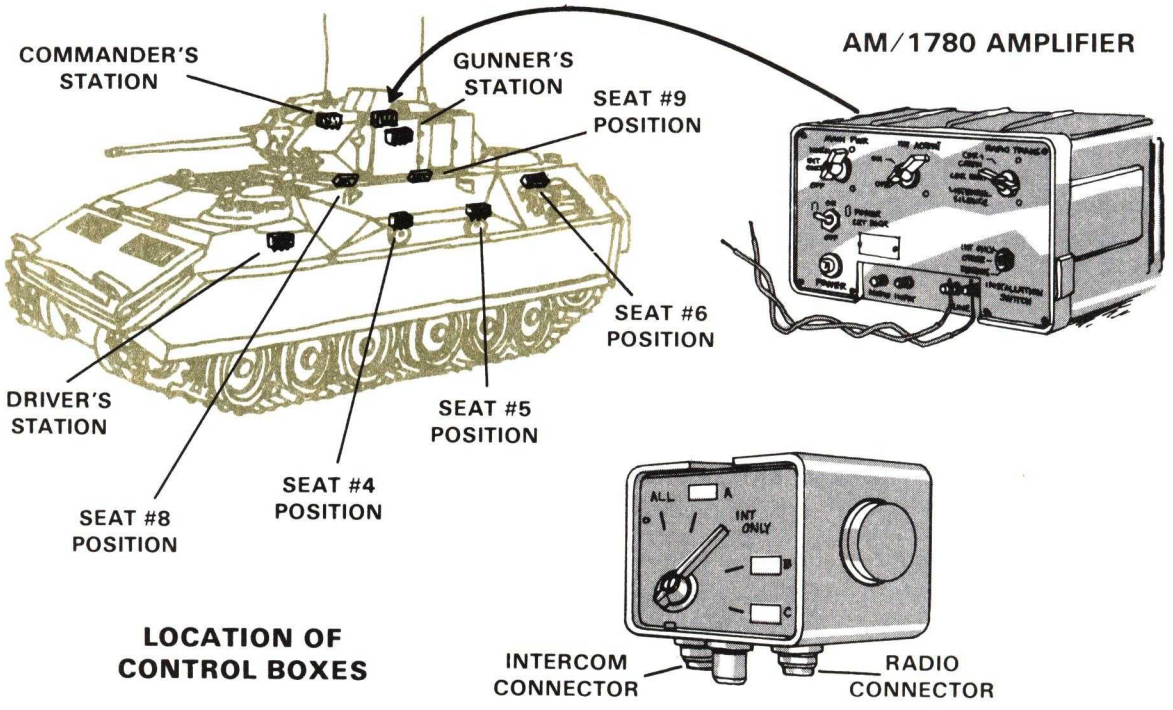


INTERCOM SYSTEM

The intercom system in each BFV consists of eight control boxes (three C-10456s and five C-2298s), six combat vehicle crew helmets, and three headsets. It allows each Bradley commander to communicate with all men in the vehicle. The Bradley commander, gunner, and driver are always issued CVC helmets. These three can use the CVC microphones and earphones to communicate over the vehicle intercom and radios. The three other CVC helmets are used in the troop compartment. The three men with the CVC helmets can listen and talk on the intercom system and the vehicle's radios. Normally, these men are located in the 5, 6, and 8 positions. (Refer to Chapter 1 for the seating order within the vehicle.) There is no rule on who gets the CVC helmets in the rear, but one man on the right, left, and rear should each have one. The helmets will plug into any of the five control boxes in the rear of the vehicle. The rest of the men in each vehicle use headsets. This flexibility is crucial when dealing with understrength squads.

The AM/1780 amplifier should be kept in the commander-only (CDR ONLY) mode and the control boxes (other than the Bradley commander's) in the intercom-only (INT ONLY) mode. This will prevent unauthorized and accidental radio transmissions. This will also prevent accidental "hot mikes," which jam radio nets.

BRADLEY INTERCOM SYSTEM



During mounted movement, the CVC helmet will be worn in place of the soldier's helmet. Before the soldier dismounts, he hangs his CVC helmet on a hook by his intercom system control box. The soldier using the headset wears his helmet over his headset. Before he dismounts, he removes the headset and places it on a hook by his control box. This is done to prevent soldiers tripping over a CVC cord or headset cord or damaging the equipment.

SECTION II. RADIOTELEPHONE PROCEDURES

GENERAL

Certain commonly used procedural words (prowords) have distinct meanings. They shorten the time used in voice communication and avoid confusion. They are used when talking on the telephone or the radio.

The most-frequently used prowords include:

OVER

"This is the end of my transmission to you and a response is necessary. Go ahead, transmit."

SAY AGAIN

"Say again all of your last transmission."

CORRECTION

"An error has been made in this transmission (or message indicated). The correct version is . . . "

I SAY AGAIN

"I am repeating transmission, or portion indicated."

ROGER

"I have received your last transmission satisfactorily."

WILCO

"I have received your message, understand it, and will comply."

OUT

"This is the end of my transmission to you and no answer is required or expected."

RULES FOR RADIO AND WIRE COMMUNICATIONS

The following are rules for radio and wire communications:

- Listen before transmitting (sending).
- Make the message short and clear.
- Speak clearly, slowly, and in natural phrases; pronounce each word distinctly. If the receiving operator must write, allow him enough time for writing.
- If jammed (using radio), use the methods listed in the discussion on communication security (below).
- In all cases of radio and wire traffic, personnel should not waste time. Send the message and get off the net.

COMMUNICATIONS SECURITY

COMSEC denies or delays unauthorized persons from gaining valuable telecommunications information.

COMSEC includes:

- Using correct authentication procedures to insure that the other communicating station is a friendly one.
- Using only approved codes.
- Enforcing net discipline and radiotelephone procedures. All stations operating in a net must use authorized call signs and prowords and must limit transmissions to necessary official traffic.
- Restricting the use of radio transmitters, and monitoring radio receivers (radio listening silence).
- Selecting radio sites with a hill or other terrain feature between them and the enemy.
- Using directional antennas when it can be done, as discussed in FM 24-1, Appendix M.
- Using low power initially.

Electronic counter-countermeasures (ECCM) prevent or overcome enemy electronic warfare. ECCM taken by a platoon are mainly using proper signal security and antijamming techniques.

Radio operators must use antijamming procedures to reduce enemy jamming effects.

They are **recognition, continued operations,** and **reporting.**

Recognition. When an operator's radio indicates interference, he first tries to find what is causing the interference. He should not immediately assume jamming, because jamming signs often are like other types of interference. Removal of the receiver antenna can help to find out if the interference is being produced internally by the receiver. If interference lessens when the antenna is removed, the problem is jamming.

Continued Operations. Normal radio operations should be continued once jamming has been identified, so that the enemy cannot determine the jamming effects. The rule is: during jamming, continue operations unless ordered to shut down or shift to an alternate frequency.

Reporting. All operators must report jamming to their next higher headquarters by some other means of communications — for example, wire or messenger.

The MIJI report contains:

- **Date and time of jamming.**
- **Frequencies affected.**
- **Type and strength of jamming signal.**
- **Designation of the unit making the report.**

APPENDIX E

Fording and Swimming Operations

SECTION I. FORDING WITH THE BFV

GENERAL

There may be occasions when platoons and squads, moving in the attack or the defense, must cross water obstacles because bridges or ferries are not available. With only minor preparation, the BFV can ford up to 3.5 feet (1.05 meters) of water. It can also swim deeper water obstacles, but this requires more preparation. These capabilities let the mechanized infantry stay on the move.

This appendix explains in general how to ford and swim with the BFV. (See TM 9-2350-252-10-1 for more detail.)

Small water obstacles, such as streams, creeks, or ponds, may have established ford sites used by local civilians. These are usually shown on military maps. As a rule, the BFV can ford at these sites. However, the BFV is not limited to established ford sites but can use other places that have suitable entry and exit points.

CONTENTS

SECTION		PAGE
I.	Fording With the BFV	E-1
II.	Swimming With the BFV	E-4
III.	Tactical Considerations	E-11

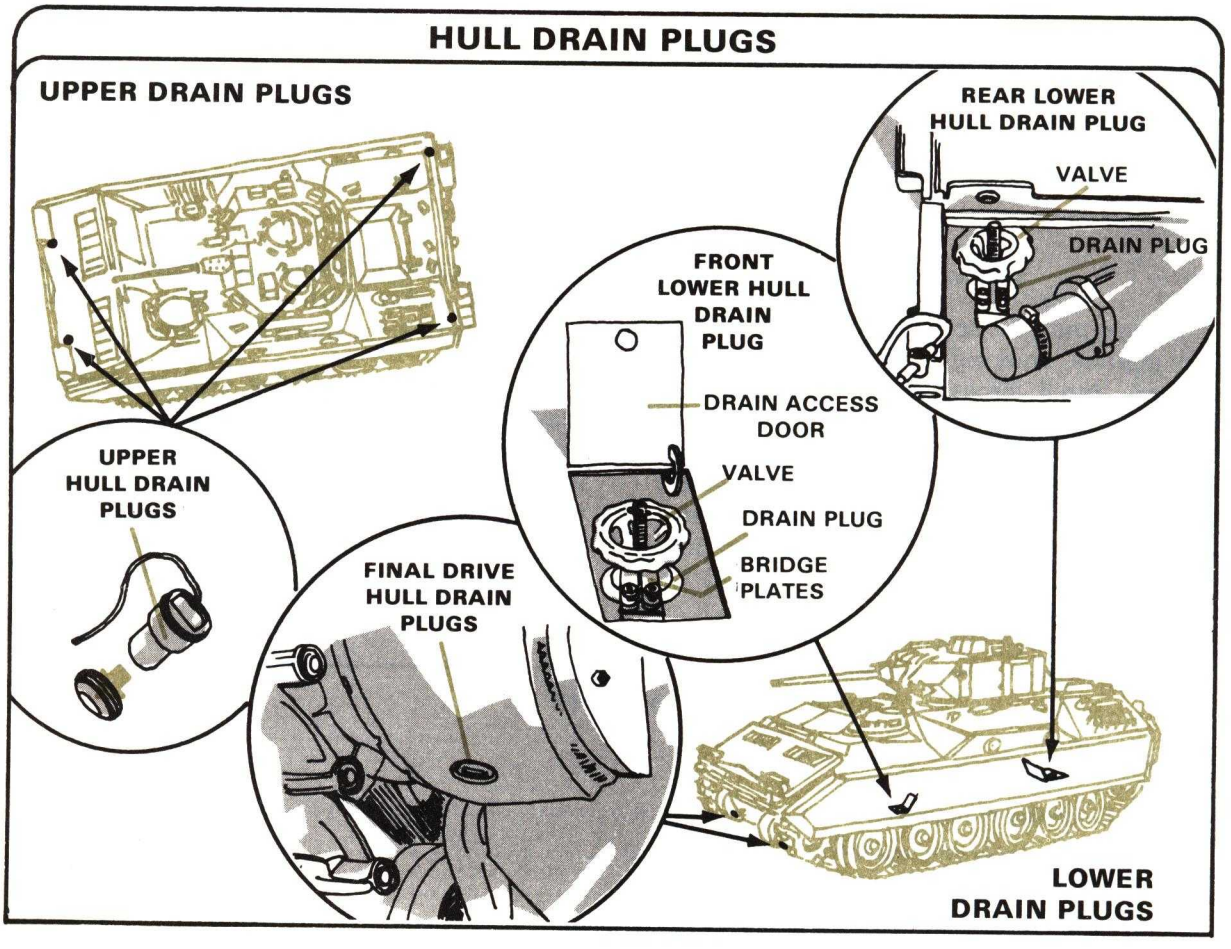
PREPARING THE BFV FOR FORDING

Platoons and squads should prepare their vehicles for fording before arriving at the ford site so that action is not stopped at a critical point in the operation. This should be done in a covered and concealed location, a short driving distance (1 kilometer or less) from the ford site. Two actions are necessary, prepare drain plugs and secure ramp and ramp door.

Prepare Drain Plugs. There is one drain plug in the bottom front of each of the two final drives. There are two hull drain plugs underneath, one in the front and one in the rear. These four drain plugs should be tightened to insure that they form a proper seal and will not let water into the hull. There are also four upper drain plugs, two in front and two in the rear, at the right and left corners of the hull. These plugs must be present and tightened to form a seal to keep water from getting inside the hull.

NOTE:

This step is different from the preparation for swimming, when these plugs are removed.



Secure Ramp and Ramp Door. The ramp and ramp door should be firmly closed and locked.

NOTE

If the BFV is fording at the upper limits of its capability (3.5 feet), the firing port weapons' holes should be plugged.

FORDING

The entry site should be firm; have a gradual slope (maximum of 30 percent or 17 degrees); and be free of rocks, stumps, deep drops, and underwater obstacles. The vehicle driver should ease the BFV into the water to prevent water from rushing back from a bow wave and swamping the hatches. When the vehicle is level, the driver should slowly drive the vehicle as he would on dry land.

If the vehicle begins to float and loses traction, the driver should continue to drive using the swimming procedures (explained in section II) until the vehicle regains its traction.

As the vehicle nears the exit point, the driver again should slow down. If there is an abrupt rise or ledge, the driver may not be able to see, so the track commander should give him instructions to get the vehicle out of the water.

AFTER FORDING

To avoid congestion, the vehicle should be moved away from the exit point to its assigned area or to continue its mission. The BFV needs no special after-fording care.

SECTION II. SWIMMING WITH THE BFV

GENERAL

When platoons and squads are required to cross bodies of water deeper than 3.5 feet (1.05 meters), they must prepare the vehicle for swimming. There are three major steps in the swimming process — preparing the vehicle, swimming the water obstacle, and restoring the vehicle to its normal fighting form.

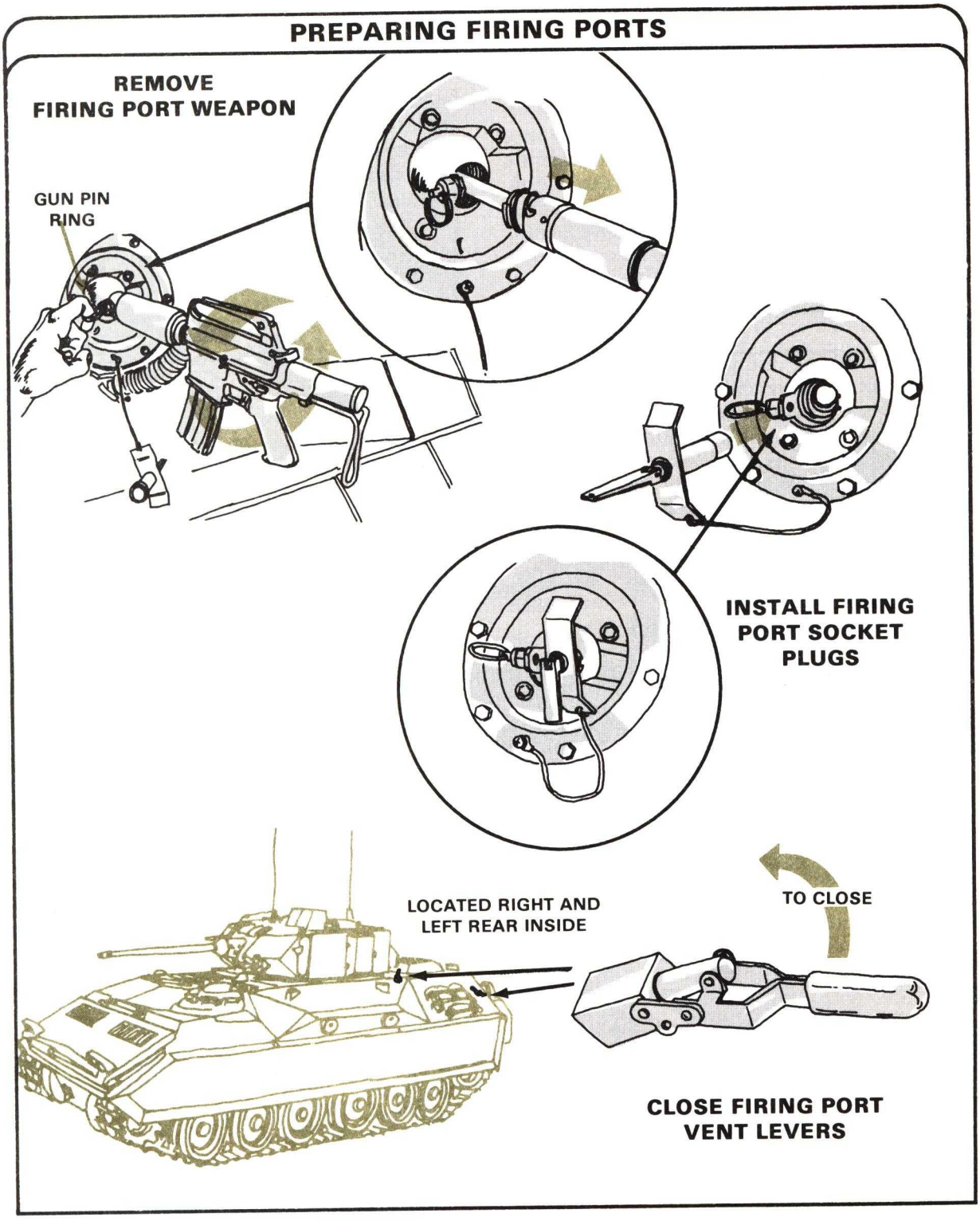
PREPARING THE VEHICLE

When platoons and squads prepare their vehicles for swimming, they should do it in a covered and concealed location within a short driving distance to the swim site. The route to the swim site should be free of dense underbrush to prevent damage to the water barrier. There are several actions to take before swimming.

Position the Turret. The turret weapons should be oriented at 6400 mils azimuth (straight ahead) with the 25-mm gun and the 7.62-mm coaxial machine gun elevated to +30 degrees. (The TOW launcher is not erected or elevated.) After the water barrier is erected, the weapons can be lowered.

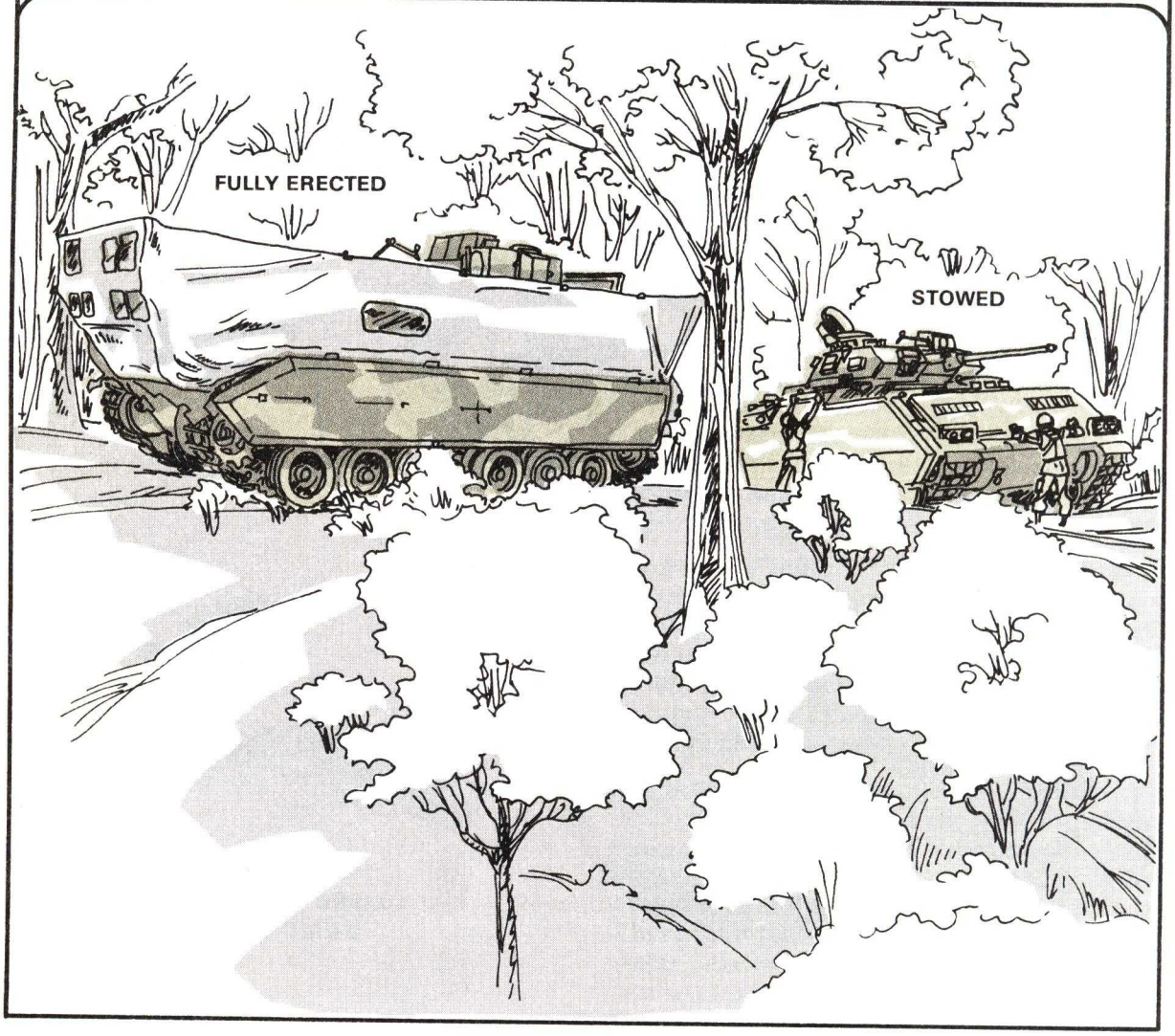
Prepare Firing Ports. The firing port weapons should be removed and plugs emplaced into each weapon's ball socket. Firing port vent levers should be closed. These seal all the firing port openings and prevent water from entering the vehicle through these holes.

Prepare Drain Plugs. The two drain plugs underneath the hull and the two in the final drives must be tightened to get a proper seal so water will not enter the vehicle. The four upper drain plugs MUST BE REMOVED. These plugs allow water that gets inside the water barrier to drain into the bilge so that it can be pumped free of the vehicle by the bilge pumps.

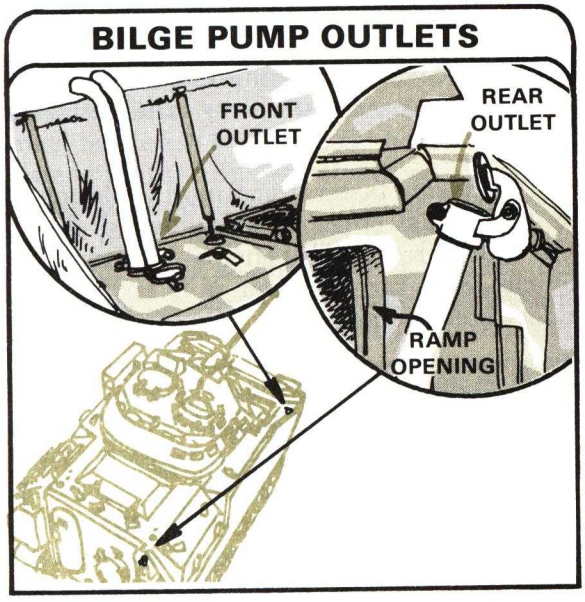

PREPARING FIRING PORTS
REMOVE
FIRING PORT WEAPON
GUN PIN
RING
INSTALL FIRING
PORT SOCKET
PLUGS
LOCATED RIGHT AND
LEFT REAR INSIDE
TO CLOSE
CLOSE FIRING PORT
VENT LEVERS

Lower the Trim Vane and Erect the Water Barrier. The driver should lower the trim vane and lock it in place. The water barrier is then unstowed and erected as explained in the vehicle TM. When the barrier is erected, it should be inspected for tears and holes that might make it unserviceable. The barrier can be repaired using the repair kit that comes with the vehicle, with a tent repair kit, or with epoxy glue and canvas.

WATER BARRIER



Install Bilge Pump Extensions. The extensions let the bilge pump expel bilge water over the right side of the water barrier.



Check Bilge Pumps. The driver should turn the bilge pumps on. The bilge pump light on the driver's instrument panel should come on. Any water in the bilge should be ejected and air should come through the bilge outlets. This can be checked by placing the hand over the outlets. The bilge pumps should be left on until the vehicle has crossed the water obstacle.

Raise and Secure the Ramp and Ramp Door. The ramp and ramp door should be closed and locked to form a proper seal. The seal can be checked by putting chalk on the seal while the ramp is lowered. The ramp should be raised and locked. It should then be lowered again. The chalk should mark the hull all the way around the surface where the ramp seal makes contact.

Open the Hatches. The Bradley commander, gunner, driver, and rear cargo hatches should be opened and locked in position. The hatches should remain open throughout the swim unless enemy fire forces their closing. The driver and Bradley commander then use the popped hatch mode. If the turret weapons are fired, the driver hatch and cargo hatch will have to be closed.

Install Marker Buoy. Each vehicle should be equipped with a marker buoy to ease recovery operations if the vehicle sinks. The marker buoy should be an empty water can or any airtight container. The buoy should be attached to the vehicle's bustle rack by a rope one and a half times as long as the estimated deepest point of the water to be crossed. The marker buoy should then be placed in the bustle rack so that it can float free should the vehicle sink.

Move Number 4 Soldier. The soldier in the number 4 seat should move to the left rear of the troop compartment and sit on the floor between the number 5 and 6 seats. This helps make up for the vehicle's right forward list in the water and makes it easier for the soldier to get out of the vehicle.

SWIMMING THE WATER OBSTACLE

The entry site should be firm; have a gradual slope (maximum of 30% or 17°); and be free of brush, large rocks, and underwater obstacles. The slope must extend the length of the vehicle. Because of the water barrier and trim vane, the driver may have difficulty seeing, so the Bradley commander will have to direct his movements. The driver should have the gear selector in LOW. As the vehicle enters the water, all hatches should be open. The entry should be slow so that a sharp bow wave will not swamp the vehicle. Entry speed should not exceed 5 mph. The maximum recommended water current is 4.0 mph. Wave height (wave valley to wave crest) cannot be more than 1 foot.

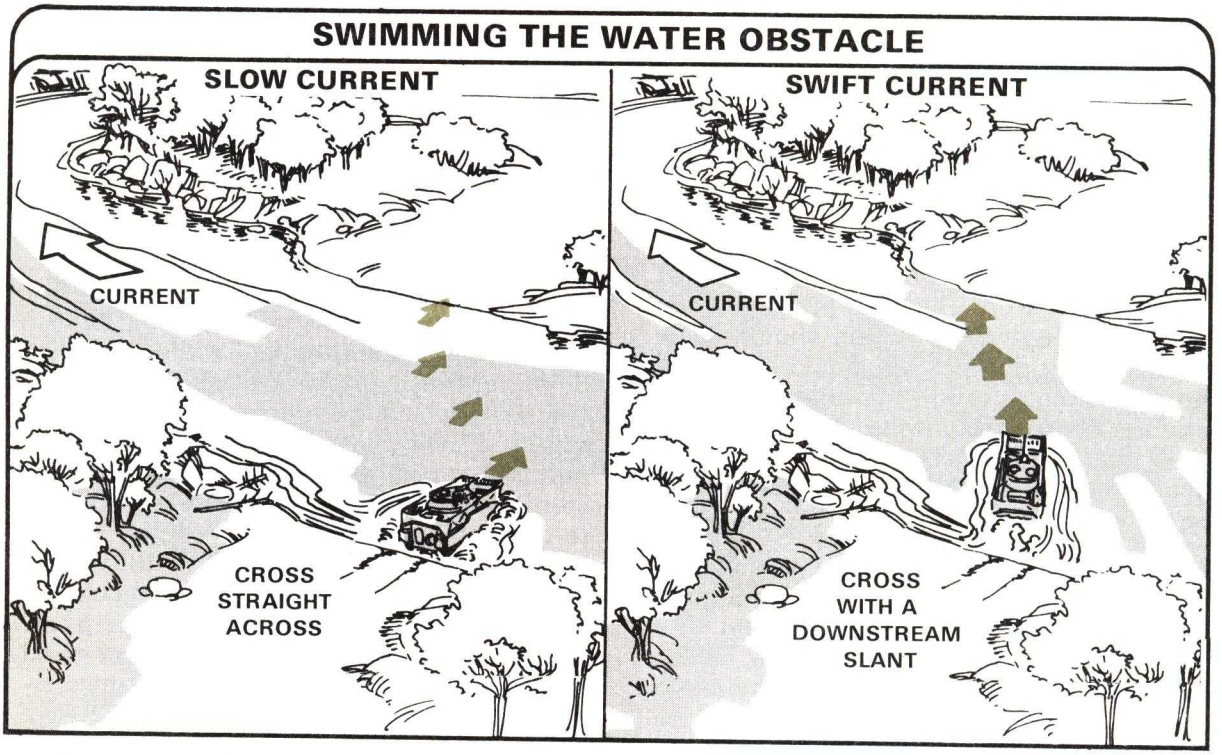
When the vehicle is afloat and the tracks are clear of the bottom, the driver should shift his range selector to DRIVE. This range is used for all water driving except when stopping, backing, or making sharp turns. The vehicle's highest speed while swimming is 4.5 mph (7.2 kmph) even though the speedometer may show a greater speed.

In water, vehicle movement is controlled as on land, but the response in the water is slower. The driver should be willing to speed up the vehicle. Fast-turning tracks give the driver better vehicle control.

To avoid going beyond turns, the driver must release the steering yoke halfway through a turn. Momentum will complete the turn. Sharp turns can be made by placing the gear selector in PIVOT STEER.

In 2-mph (3.2-kmph) currents or slower, the BFV can cross in any direction. The fastest way is to head straight across and let the current carry the vehicle downstream.

In currents faster than 2 mph (3.2 kmph), the BFV must cross on a downward slant with the current. This helps to keep the vehicle from turning over if it strikes an underwater obstacle.



Stops should be planned and started long before the stopping point is reached. Vehicle momentum must be kept in mind and used. When the accelerator is released, the tracks will stop and the vehicle will slow down. By shifting the range selector to REVERSE and depressing the foot pedal, the vehicle will move to the rear. Rearward movement can be stopped by releasing the accelerator, putting the gear selector in DRIVE, and increasing the speed.

As the vehicle nears the exit bank, the driver and Bradley commander should look for firm, gently sloping ground (no more than 17 degrees) that is free of obstacles. These entry and exit slopes must extend into the water at least the length of the vehicle. These

limitations are based on the design of the BFV and its swim barriers but they do not consider the effects of unstable or poor traction on river banks. Water-entry speed must be limited to 5 miles per hour to prevent damage to the trim vane structure. The driver should ease up on the accelerator. This is one of the most crucial points in swimming. If only one track makes ground contact, the vehicle can be thrown off course and become swamped if the tracks are moving too fast. The driver should try to touch bottom with both tracks at the same time. When both tracks have enough traction for normal steering, the driver can drive the vehicle out of the water. The Bradley commander will have to give the driver detailed instructions, because the driver cannot see over the trim vane and water barrier.

RESTORING THE VEHICLE TO ITS NORMAL FIGHTING FORM

Once the vehicle is out of the water, the driver should lower the trim vane so that he can see better and the turret weapons can be fired freely without damaging the water barrier. The Bradley commander should immediately direct the driver away from the exit site to avoid congestion, gain dispersion, and provide security.

Once the BFV is in a covered spot, the water barrier should be stowed as explained in the TM. When water stops coming out of the bilge pumps, the pumps can be turned off and the bilge pump extensions removed. The front bilge pump outlets must be closed. The drain plug access covers should be lifted and the drain plugs opened to release any water left in the bilges.

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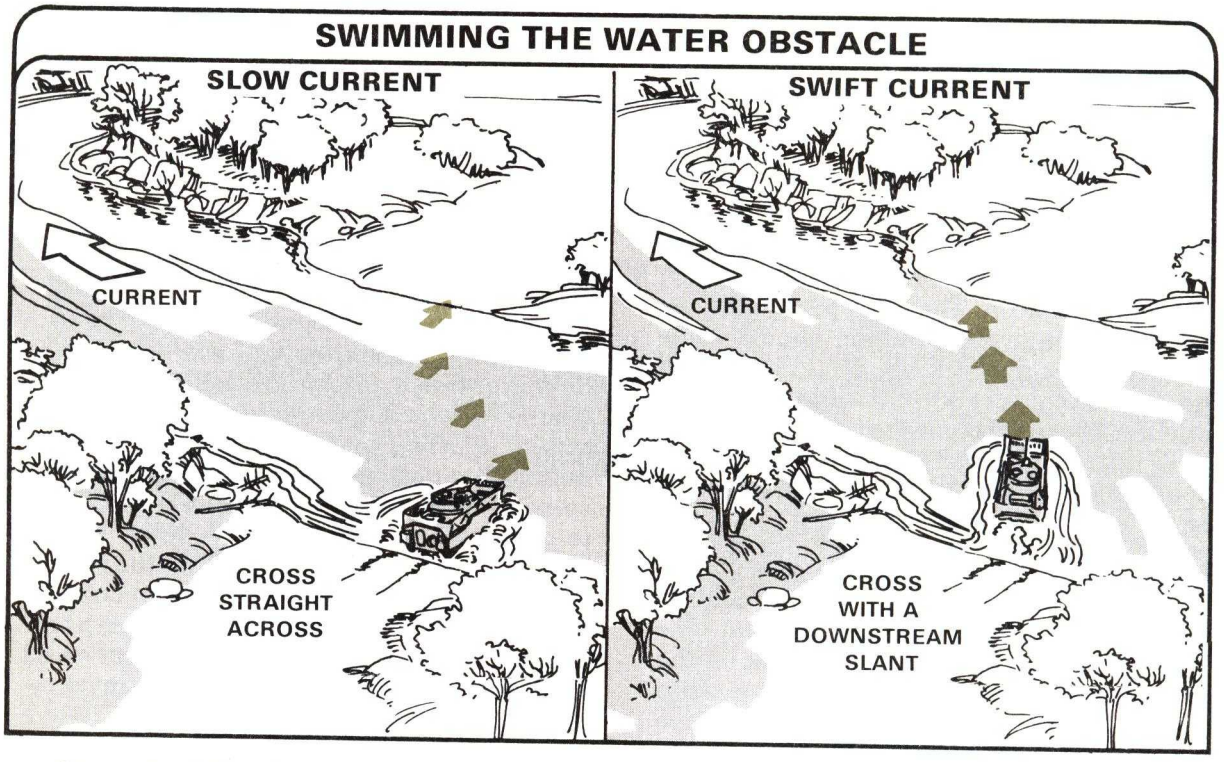

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Before continuing operations, the peepholes on the road wheels, idler wheels, and roller hubs, and the final drive dipsticks should be checked for contaminated oil. The oil is contaminated if bubbles appear in it or if it has a milky color. Contaminated oils should be replaced as soon as possible.

SAFETY CONSIDERATIONS FOR SWIMMING THE BFV

Before swimming the BFV in any peacetime operation, and when possible in combat situations, the vehicle should be predipped. This check insures that the vehicle is safe and ready to swim. The vehicle is readied for swimming as explained earlier. A cable from a medium recovery vehicle M88 should be attached to the BFV's tow pintle. The vehicle then enters the water until afloat. Soldiers in the troop compartment should check for leaks. The Bradley commander should check to see that the bilge pumps work. If all is well, the vehicle backs out of the water. If it has movement problems, the M88 will tow it.

Each BFV should be checked before swimming operations to insure that its intercom system and radio work.

Personnel in the vehicle should not wear seat belts while the vehicle is swimming. The belts could hinder safe exit if the vehicle begins to sink or does sink.

Every man should wear an inflatable life jacket. Life vests are not issued with BFVs. They must be provided by support elements. THE LIFE JACKET SHOULD NEVER BE INFLATED INSIDE THE VEHICLE. It should be inflated only when the soldier is free of the vehicle.

Personnel in the vehicle should not wear load-carrying equipment, packs, or pistol belts while the vehicle is swimming. Such items may snag in the vehicle as a soldier tries to get out of a sinking vehicle.

Every man in the BFV must know where and how he is to leave the vehicle if it sinks. The Bradley commander, gunner, and driver leave through their respective hatches. Personnel in the troop compartment may get out through the cargo hatch.

The following emergency escape actions are to be taken if the vehicle begins to sink:

- **The Bradley commander alerts all personnel of the vehicle's sinking.**
- **Personnel begin to leave through their designated hatches as the vehicle sinks. Once free of the vehicle, they inflate their life jackets.**
- **If for any reason personnel are unable to get out through the hatches, they can go through the ramp door. They must wait, though, until water fills the troop compartment, equalizes the water pressure, and allows the ramp door to open.**

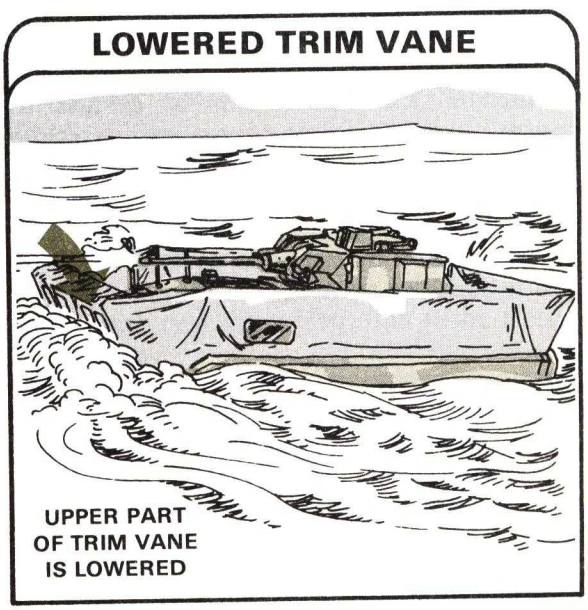
SECTION III. TACTICAL CONSIDERATIONS

GENERAL

During fording operations, the 25-mm gun, 7.62-mm coaxial machine gun, and firing port weapons can be fired. (The driver's hatch and the cargo hatch must be closed or in the popped hatch position before the turret weapons can be fired.) The TOW should not be fired because the vehicle must be halted while the gunner controls the missile from firing to impact. Halting could endanger the vehicle.

During swimming, the 25-mm gun and 7.62-mm coaxial machine gun can be fired, but the TOW and the firing port weapons cannot. These two turret weapons must be fired only at targets that are at least 7 degrees above the horizontal. Firing at lower targets will result in the weapons shooting away part of the water barrier.

If there are targets lower than +7 degrees, the driver can lower the upper portion of the trim vane by pulling the wooden release handle.



NAVIGATING WHILE FORDING OR SWIMMING DURING LIMITED VISIBILITY

Two methods of navigating can be used while fording or swimming. The first uses the turret stabilization system. Just before the BFV enters the water, the Bradley commander should point the 25-mm gun along the azimuth he wishes to follow during the crossing. The gunner then engages the stabilization system and keeps a slight pressure on the palm grips. As the vehicle crosses the water obstacle, the barrel should stay oriented in the direction of the exit bank (but not at a specific point on the bank). The Bradley commander directs the driver's steering, keeping the vehicle's forward motion centered on the 25-mm gun barrel.

In the second method of navigating, the Bradley commander uses his binoculars to observe the far bank and other vehicles that are to the front. The commander then directs the driver where and how to drive across.

CROSSING FORMATIONS

Formations will normally be dictated by the number of usable entry and exit points. When only a few points are available, the crossing may have to be in a column formation. This formation is easiest to control, but the crossing requires more time to complete. When many entry and exit points are available, the unit may be able to cross on line. Although crossing on line gets the unit across the obstacle in the least time, it is difficult to control.

SMOKE

While BFVs are crossing water obstacles, they are vulnerable to enemy fires. This is because of their slow speed and the lack of cover and concealment. Little can be done about slow speed and lack of cover, but BFVs can provide much of their own concealment.

The BFV's smoke-screen generator can be used to blanket the entire crossing, but wind direction affects this action. If a swimming vehicle is engaged by an enemy tank or antitank gun or detects the launch of an ATGM, it can get nearly instant smoke-screen protection from the smoke-grenade launchers. This smoke screen lasts only 15 to 20 seconds if the smoke pellets land on the water. If the smoke pellets land on the far bank, the smoke screen will last 1 to 3 minutes, depending on the wind speed and direction.

SUPPRESSION

Before, during, and after the crossing, every effort should be made to suppress and destroy enemy direct fire and indirect fire weapons and forward observers who can bring fire to bear on the crossing site.

Tanks, ITVs, and BFVs on the near shore should be positioned where they can suppress enemy positions and weapons on the far bank. The fording and swimming BFVs can also help suppress with their 25-mm guns and 7.62-mm machine guns.

APPENDIX F

Air Defense

SECTION I. INTRODUCTION

GENERAL

Besides the increase in the number and quality of Threat ground forces, there has been a marked improvement and increase in Threat air forces. Threat air forces will be able to control parts of the battlefield airspace. This appendix discusses methods to defeat Threat high-performance (jet) aircraft and attack helicopters. Since the enemy can be expected to place troops in the battle area by helicopter and parachute, this appendix also discusses engagement of those types of targets.

To effectively defend against air attack, units must make maximum use of cover, concealment, camouflage, dispersion, and early warning. The best way to avoid an air attack is to conceal. Units must also be proficient in the use of their weapons in air defense. Enemy aircraft can attack any ground force whose location has been discovered. The sighting of a few soldiers or vehicles can lead to the disclosure of a whole unit, even if the rest of the unit is well hidden.

Attacks will probably be unexpected and swift. To prevent surprise, early warning of a probable attack is necessary so that troops have a chance to take cover. This warning may come down through normal command channels or start with Bradley commanders, air guards, and/or local OPs. All Bradley commanders and OPs should have airwatch instructions.

THREAT TACTICS OF JET AIRCRAFT

Threat jets usually work together in two teams with two aircraft in each team. Using

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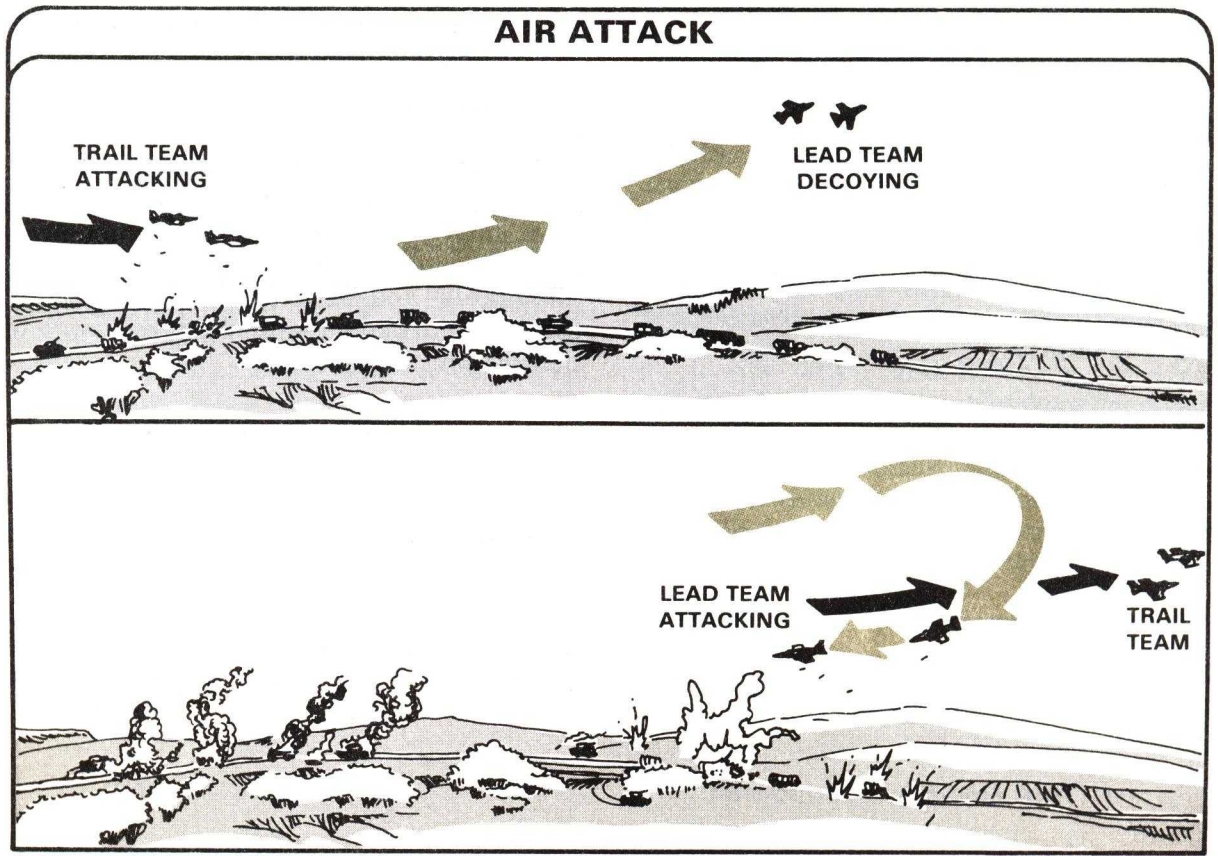
high speed for surprise and survival, they usually strike along the long axis of the target. This gives them a better chance to hit the target. They try to attack out of the sun to gain surprise. Threat jet aircraft weapons include automatic guns, rockets, bombs, and cluster bomb units (CBUs). With guns and rockets, they can fire from a distance, but they must fly over or near the target to accurately deliver conventional bombs. They will make two runs on the target — dropping bombs on the first pass and using rockets and cannons on the second.

A common Threat tactic is to have one team of jet aircraft attack a target, followed by a second team 1 to 3 miles behind. The teams try to surprise the target and divert attention and defensive fire. When the lead team spots a target, it tells the trailing team; then, the lead team pops up in full view of the target. This draws fire to the lead team, while the trailing team, which has not yet been seen, flies in at high speed for a low-altitude attack. The attack is usually level, under 1,000 feet, with cluster bomb units released along the target's long axis. The lead team then makes a sharp reverse turn to attack the target close-in, firing guns and rockets or divebombing for maximum effect. If the target is surprised by the lead team and does not take evasive action, the trailing team will get maximum effect with the cluster bomb units. If the target only evades the first attack and does not concentrate fire on the lead team, this team will get maximum results with rockets and bombs on its return pass.



The best defense against attacking Threat jet aircraft is to:

- **Be familiar with Threat air tactics and not be surprised by the trailing jet team.**
- **Immediately concentrate volume fire on any attacking jet, while dispersing and taking evasive action.**
- **Make maximum use of all small arms to fire at the target.**

THREAT TACTICS OF ATTACK HELICOPTERS

Threat forces have some of the most heavily armed helicopters in the world. Attack helicopters fight in teams of two or more. They are more agile and maneuverable than jet aircraft and use ground cover and concealment while engaging from stand-off positions. A variety of weapons can be employed in support of this action such as 57-mm free flight aerial rockets (FFAR), antitank guided missiles, general purpose bombs, and 12.7-mm machine guns.

Attack helicopters will be used extensively in forward areas to provide close air fire support (aerial fire support for the attacking forces similar to the A-10 support for US forces) and for combat air assault operations in friendly rear areas.

Attack helicopters will also be used to provide antitank fires (ATGM fires such as AT-2 Swatter or more advanced AT-6 spiral) and air-to-air interdiction (a secondary mission together with one of the other combat roles). After firing their ATGMs, attack helicopters will normally sideslip for a quick reduction in altitude before withdrawal out of sight.

The best defense against attacking Threat helicopters is to:

- **Immediately concentrate volume fire on any attacking helicopter within range.**
- **Take evasive action and disperse.**
- **Create a smoke screen between the BFV and attacking helicopters to counter the helicopter's weapons, mainly the ATGM.**

SECTION II. TARGET ACQUISITION AND ENGAGEMENT

GENERAL

Air Guards. During mounted operations, the Bradley commander is in the best position on the vehicle to act as an air guard. Since the Bradley commander is also required to identify ground targets, his field of view is often not oriented toward the sky and other members of the crew must assist in air guard duties. This may be done by opening the cargo hatch and placing one or two observers in it. Though the field of vision from the cargo hatch is limited, it does provide a view to the flanks or rear of the vehicle.

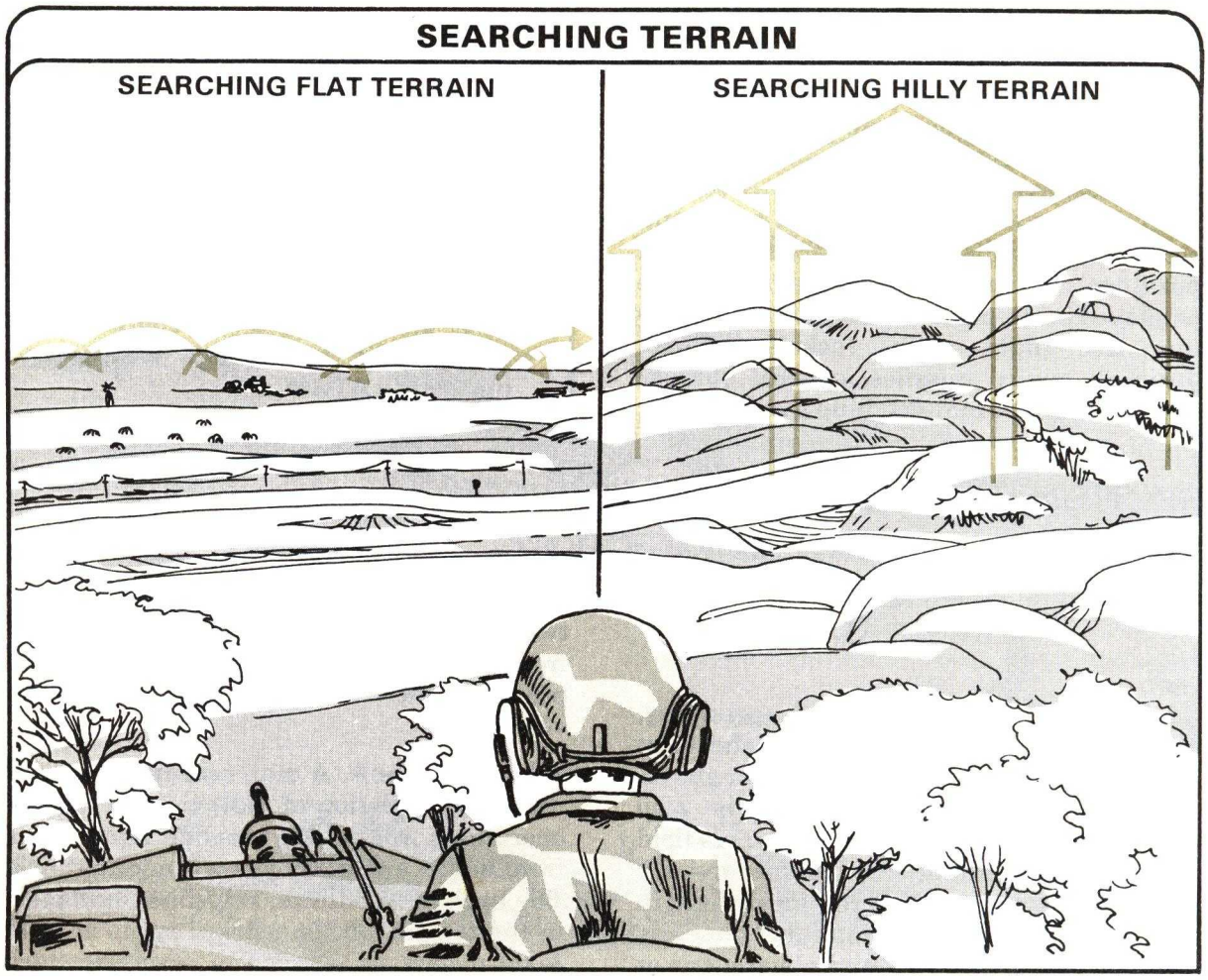
Where to Look. A map reconnaissance of the unit's direction of movement or area of operations will help to pinpoint likely areas from which an enemy aircraft might attack. The back of woodlines, ridgelines, and folds in the terrain can be marked out to at least 3,000 meters as a guide to possible attack

helicopter positions. Restrictive terrain, defiles, and narrow valleys, where the unit may have to close in, are also areas which should be approached with caution. Moving close together through such areas offers a lucrative target for tactical air attack along the long axis of movement.

How to Look. To see attacking aircraft soon enough for a platoon to react, Bradley commanders or air guards (mounted) and individual soldiers (dismounted) must constantly be on the alert for hostile aircraft. Two techniques are suggested: one for flat terrain, the other for hilly terrain. In both types of terrain, members of the platoon should frequently focus on a distant object, such as a cloud or terrain feature. If this is not done, the eyes tend to relax, and distant objects become blurred.

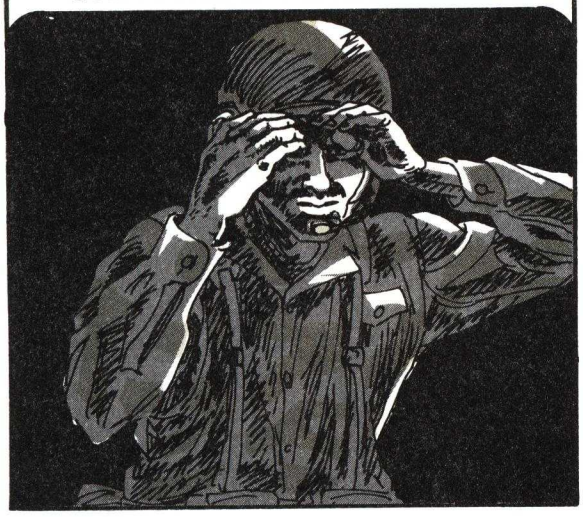
In flat terrain, during daylight, platoon members should search the horizon by short eye movements from object to object. This way, more detail is registered than by a continuous scan of the horizon.

In hilly terrain, during daylight, platoon members should search the sky using the horizon as a starting point and prominent features as points of reference.



Searching for air targets at night is similar to searching for ground targets at night. Techniques include short, jerky, abrupt movements of the eyes. Off-center vision (looking slightly to the side of an object) is used to prevent an image from fading. Night vision is aided by cupping the hands around the eyes to shield out distracting light.

SHIELDING FROM LIGHT



What to Look For. Searchers should be alert for the following:

- **Sun reflection from aircraft canopies or cockpit windows.**
- **Blade flash from rotating helicopter blades.**
- **Smoke or vapor trails from jet aircraft, missiles, or rockets.**
- **Dust or excessive movement of treetops and bushes in a particular area caused by the downwash of helicopter blades.**

Searchers should also listen for noise from helicopter blades, or jets breaking the sound barrier.

The BFV's nightsight, dismounted weapons' nightsights, or binoculars can be used to detect distant targets not visible to the naked eye.

When to Engage. Specific rules for engaging aircraft should be in the unit SOP. These rules are based on policies of higher headquarters.

Without SOP guidance, the following is suggested:

- **Immediately engage all attacking aircraft.**
- **Engage enemy aircraft not attacking your position only when told to do so. Aircraft must not be engaged arbitrarily. To do so may compromise your position.**
- **The best defense against enemy aircraft may be passive measures, such as camouflage, cover, and concealment.**

How to Suppress. Likely areas where Threat helicopters may be hiding (behind hills and treelines) should be suppressed by fire just as ground target areas are suppressed. This can be done by indirect fire of mortars, artillery, and the BFVs onboard weapons.

AIRCRAFT ENGAGEMENT

Enemy aircraft are engaged to destroy the aircraft, if possible, to force the aircraft away from friendly positions, to force the aircraft to fly higher so that it can be picked up and destroyed by friendly air defense weapons or friendly aircraft, and to spoil the hostile aircraft's aim while it is engaging friendly forces.

Vehicles must take evasive action when engaging or being engaged by hostile aircraft. This lessens the effectiveness of the hostile aircraft's fire.

Evasive actions include:

- **Seeking cover and concealment.**
- **Keeping vehicles dispersed.**
- **Moving with frequent changes of speed and direction while turning away from the hostile aircraft's axis of attack.**
- **Avoiding use of lights at night.**

BFV WEAPONS' CAPABILITIES AND LIMITATIONS

The 25-mm gun and the 7.62-mm coaxial machine gun can elevate to +60 degrees. The 25-mm gun has three rates of fire: single shot, 100 rounds per minute, and 200 rounds per minute. For air defense, the 200-rounds-per-minute rate should be used by firing HEI-T in 25-round bursts (unless the target is a Hind). This allows a rapid rate of fire without using too much ammunition. If the target is a Hind, APDS should be used.

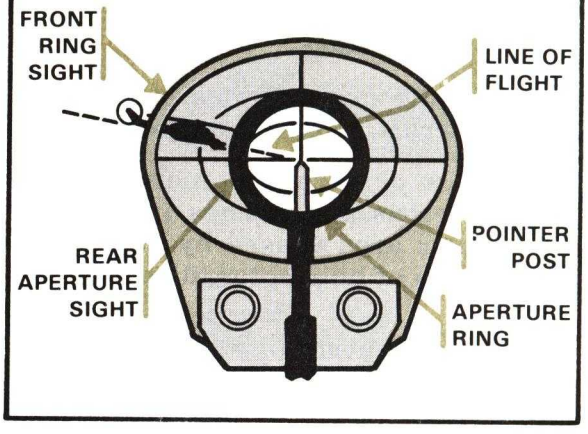
The 7.62-mm coaxial machine gun has a cyclic rate of fire of 650 to 950 rounds per minute. The maximum effective range is 900 meters. Because of jet aircraft's high speed while flying a crossing course, the 7.62-mm coaxial machine gun should be used to engage them instead of using the 25-mm gun. Helicopters, when they are in range and flying a crossing course at high speed, should also be engaged using the 7.62-mm coaxial machine gun. The ready load for the coaxial machine gun is 800 rounds with 1,540 additional rounds stowed. The advantage in using the coaxial machine gun is its greater cyclic rate of fire, larger stowed load, and its faster reload than the 25-mm gun.

The BFV is equipped with a ring sight, mounted on the outside of the turret in front of the Bradley commander's hatch. The ring sight is used when firing the 25-mm gun (using HEI-T) and the 7.62-mm coaxial machine gun at slow-moving aircraft. It has a front ring sight and rear aperture sight, which is made up of the pointer post and aperture ring. The front ring sight is marked with sighting crosshairs and three-speed rings. Each speed ring is spaced for a target lead of 50 miles per hour. An estimate of the aircraft's speed is needed to compute the lead to hit the target. The rear aperture sight has an aperture ring and a pointer post. The sight is used as illustrated. If APDS is being used against the heavily armored Hind, its flatter and faster trajectory causes it to require less lead.

The front sight crosshairs are aligned ahead of, and in line with, the aircraft's line of flight.

Looking through the rear aperture sight, the Bradley commander leads the target one ring for each 50 miles per hour the target is estimated to be moving. The target in the illustration has an estimated speed of 75 miles per hour.

BFV RING SIGHT

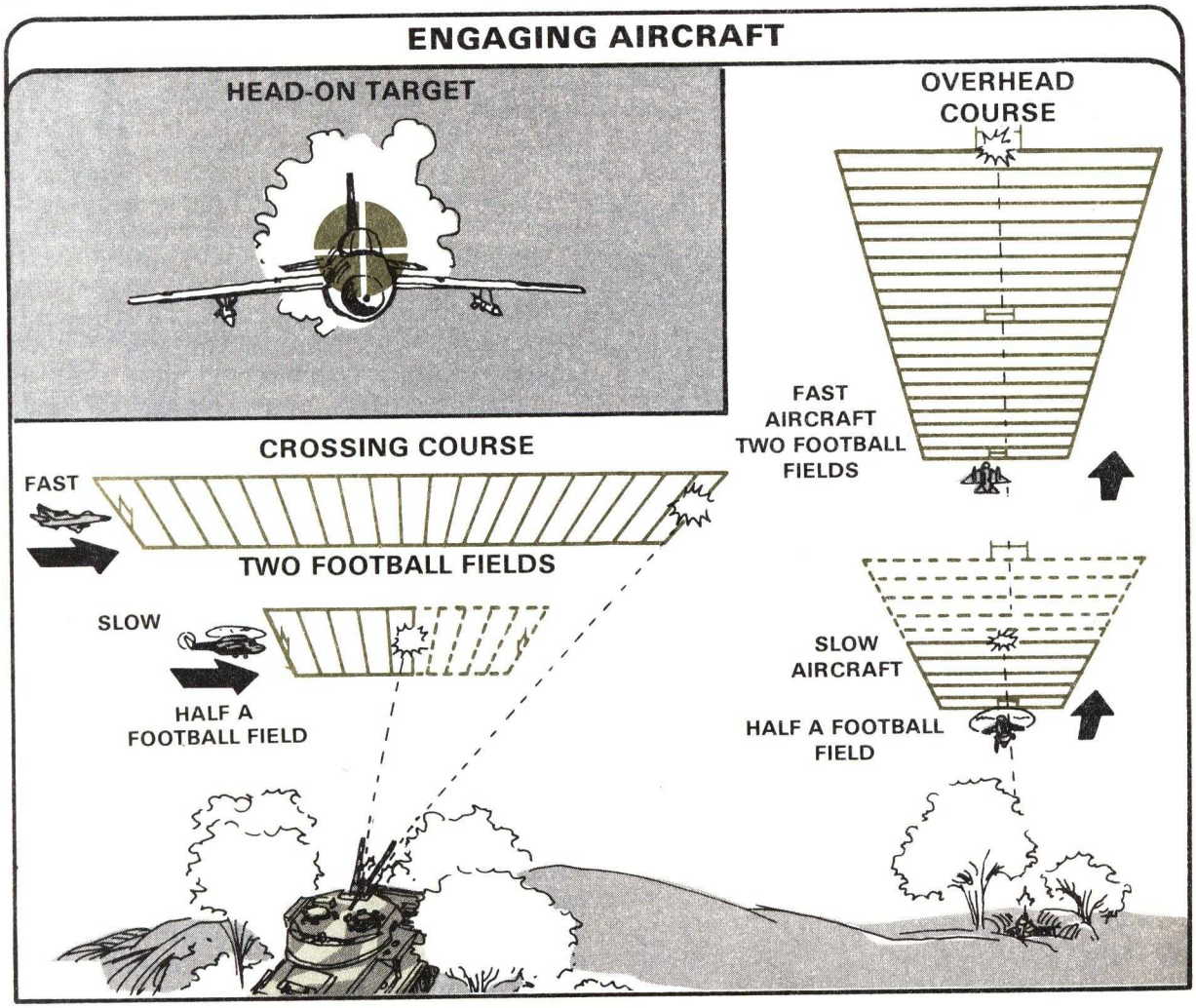


NOTE:

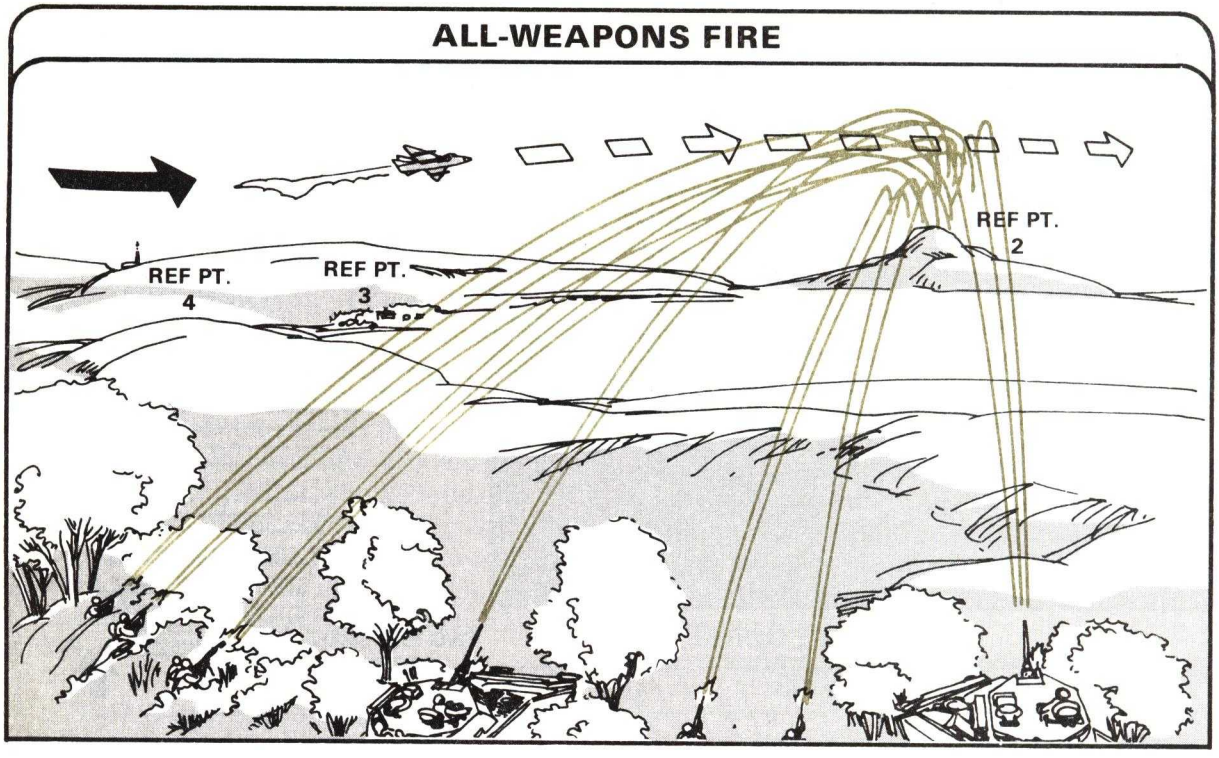
The pointer post should be put on the target. The aircraft is engaged with the 7.62-mm coaxial machine gun using a continuous burst of fire at the lead aim point.

ENGAGING FAST-MOVING AIRCRAFT

Because of its speed, a jet aircraft can best be engaged by the 7.62-mm coaxial machine gun in a continuous burst. When the aircraft is flying a crossing course, the Bradley commander uses a lead of 200 meters — two football field lengths. Fire is directed ahead of the aircraft, letting the aircraft fly through the machine gun's cone of fire. The Bradley commander should not try to track or traverse with the aircraft. It flies too fast. The dismount element, with its M16A1 rifles, SAWs, or M60 machine guns, uses the same 200-meter lead to engage jet aircraft. For helicopters, a 50-meter (half a football field) lead is used. If the aircraft, either jet or helicopter, is flying directly toward the BFV, the Bradley commander should aim and fire slightly above the aircraft nose.



A second technique to engage high-speed aircraft is to choose a reference point or a series of reference points. The platoon leader alerts the platoon to get ready. As the aircraft approaches a reference point, he orders, "ENEMY AIR, REFERENCE POINT 2 — FIRE." All BFVs and all dismounted soldiers raise their weapons to a 45-degree angle over the designated reference point and fire.



ENGAGING HOVERING HELICOPTER

If a hovering helicopter is picked up by the Bradley commander or gunner, the aircraft is engaged with the 25-mm gun using the gunner's integrated sight unit. Range to the target is estimated by using the stadia lines in the sight reticle, making a quick check of the map for the target's location and range, using reference points whose range is already known, or estimating the range and adjusting the rounds until they hit the target. The Hind is approximately the same height

as a BMP when measured from the bottom of the aircraft to the top of the pilot's canopy. Using the integrated sight unit is more accurate than the ring sight, and the 25-mm gun is more effective than the 7.62-mm coaxial machine gun. Bursts of 25 rounds of HEI-T (APDS for Hinds) are fired at 200 rounds per minute. The gunner aims slightly above the fuselage. At longer ranges, tracers may appear to be striking the target when they are actually going under it.

ENGAGING HOVERING HELICOPTER

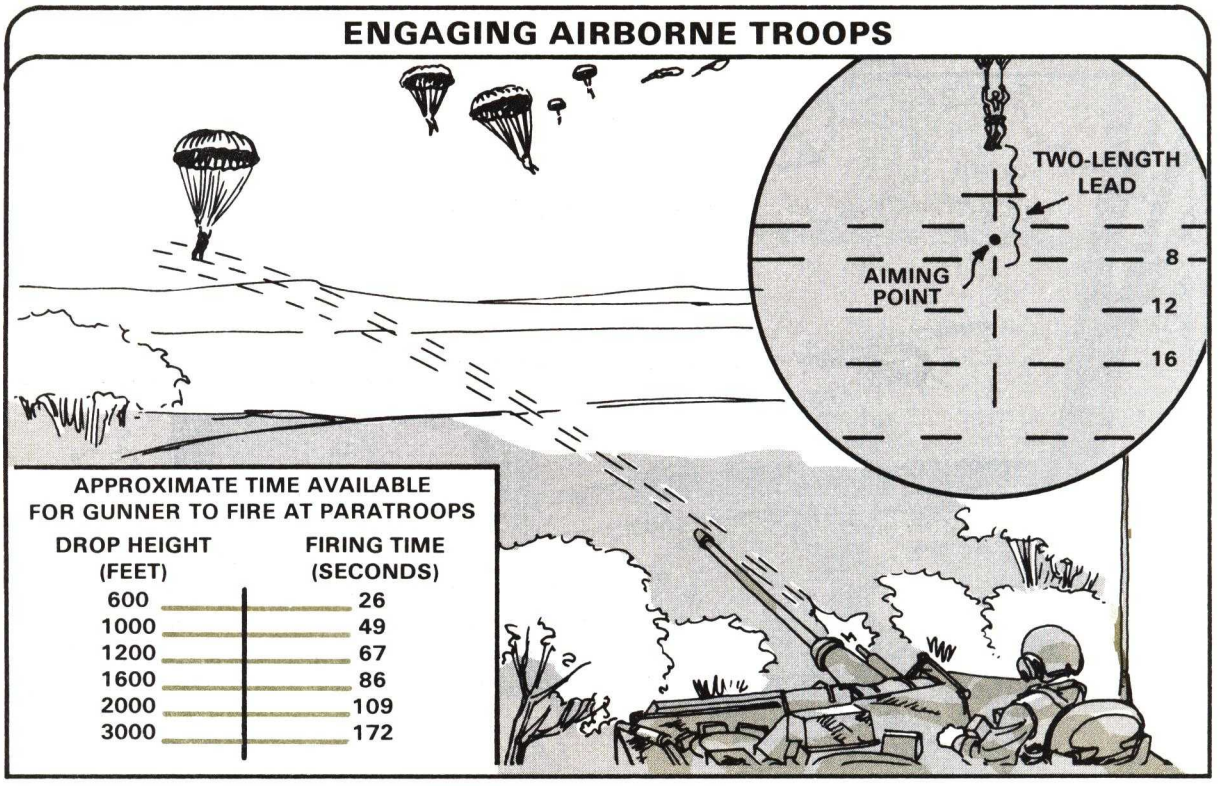
ENGAGING ENEMY AIRBORNE/AIR ASSAULT FORCES

Enemy forces in the attack will frequently try to airdrop or insert troops into the battle area by helicopter or transport aircraft. If landing zones are not available,

troops may rappel from their helicopters. If troop-carrying helicopters are sighted, they should be engaged as soon as possible using techniques previously discussed. If rappelling troops are sighted, the helicopter should be engaged, not the troops, because it is a better target.

It is harder to engage airborne soldiers because they are dropped from fast-moving aircraft at high altitudes and they descend too fast to track effectively. When using the 7.62-mm coaxial machine gun or the M60 machine gun, a lead must be taken to compensate for the airborne soldiers' rate of descent. Use a lead of two man-heights beneath the dropping soldier.

Pilots who have bailed out of disabled aircraft should not be considered as airborne troops. Engaging parachuting pilots violates the covenants of the Geneva Convention.



SUMMARY

The platoon must search continually for hostile aircraft as well as ground targets.

Aerial targets can be destroyed or suppressed by the BFV's mounted and dismounted weaons.

US troops must be familiar with Threat air tactics, both high-performance aircraft and helicopter.

Aircraft engagement rules should be part of the unit SOP.

US troops must take evasive action and engage with all appropriate weapons to destroy attacking aircraft.

BFV and dismounted weapons are also effective against other aerial targets, such as airborne and air assault infantry.

APPENDIX G

Tactical Road Marches and Assembly Areas

SECTION I. TACTICAL ROAD MARCHES

GENERAL

The ground movement of troops can be accomplished by administrative marches, tactical movements, and tactical marches.

Although administrative marches may break up unit integrity, they are used in rear areas when speed and best use of transportation assets expedite movement.

Tactical movements, as described in Chapter 4, are used when contact with enemy forces is a possibility.

Tactical marches are normally used to move units from rear areas to assembly areas in preparation for the conduct of a mission. Although a company may be required to conduct a tactical march, the platoon and company normally move as part of the battalion.

The tactical march is conducted when speed is essential, unit integrity must be maintained, road nets are available, and enemy contact is limited.

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II. Assembly Areas	G-7

The following definitions apply to tactical road marches and foot marches.

- ***Arrival Time.*** The time the head of a column reaches a designated point or line.
- ***Clearance Time.*** The time the tail of a column passes a designated point or line.
- ***Column (Time) Gap.*** The space between two consecutive elements calculated in units of length (meters) or units of time (minutes), measured from the rear of one element to the front of the following element.
- ***Completion Time.*** The time the tail of a column passes the release point.
- ***Critical Point.*** A selected point along the route of march used for reference in giving instructions; any point along the route where interference with the troop movement may occur.
- ***March Unit.*** A unit that moves and halts at the command of a single commander — normally one of the smaller troop units such as a platoon or company.
- ***Pace Setter (Vehicle).*** A vehicle in the lead element that is responsible for regulating speed.
- ***Pass Time.*** The time between the movement of the first element past a given point and the movement of the last element past the same point.
- ***Rate of March.*** The average kilometers-per-hour traveled.
- ***Release Point.*** A well-defined point on a route at which the elements composing a column return to the authority of their respective commanders.
- ***Serial.*** A grouping of march units under a single commander. It is usually a battalion, brigade, or larger unit. For convenience in planning, scheduling, and control, it is given a numerical or alphabetical designation.
- ***Start Point.*** A well-defined point on a route where the elements of the move come under the control of the movement commander. It is at this point that the column is formed by the successive passing of each of the elements in the column.
- ***Vehicle Distance.*** The space between two consecutive vehicles of an element in the column.
- ***Organization of a March Column.*** Depending on the size and number of units conducting the move, the battalion is normally formed as a serial with companies and elements of headquarters and headquarters company formed into march units. The entire column is organized into an advance party, main body, and trail party. The advance party consists of a reconnaissance element and a quartering party; the trail party is made up of maintenance, recovery, and medical elements; and the main body is made up of the rest of the force.
- ***Vehicle Dispersion.*** The move can be conducted with vehicles traveling in close column, in open column, or by infiltration. Which method to use is determined by the degree of control required to maintain a cohesive unit, and by the terrain that is being traveled — for example, open terrain requires more dispersion than close terrain.

In close column, vehicles are spaced approximately 25 meters apart during daylight. At night, and during reduced visibility, vehicles are spaced so that the driver and Bradley commander can see the two lights in the blackout marker of the vehicle ahead, if not the vehicle itself. This method takes maximum advantage of traffic capacity of routes but provides little dispersion. Close

column is normally used for marches during darkness and under blackout conditions, and to move rapidly through urban areas to insure integrity and control of the column.

In open columns, the distance between vehicles is increased to provide greater dispersion. Vehicle distance varies from 50 to 100 meters. The increased distance provides greater protection against air and artillery fires, and ground attack by small enemy forces. It also allows the command vehicle and other vehicles not restricted by march orders to pass the column without disrupting its organization.

During a move by infiltration, vehicles are dispatched individually, as small groups, or at irregular intervals at a rate that will keep traffic density down and prevent undue massing of vehicles. Infiltration provides the best possible defense against enemy observation and attack. It is suited for tactical road marches when enough time and road space are available and when maximum security, deception, and dispersion are desired.

When vehicles are farther apart than prescribed in open/closed column, they close up by traveling at a prescribed higher speed. This catch-up speed is normally fast enough to allow the column to close up over a long road distance, thus reducing the accordion effect produced by rapid changes in speed. A fixed catch-up speed also provides an additional safety factor for the march.

CONDUCT OF THE TACTICAL ROAD MARCH

The movement order issued by the company commander includes information on the enemy and friendly situations, destination, route, rate-of-march, catch-up speed, order of march, start point, location and time, vehicle distances, release points, critical points, combat service support, communications, and location of commander during the march. Many items of a movement order are SOP. Along with the order, the commander normally issues strip maps of the route. A strip map is a sketch of the route of march and contains as a minimum a start point, a release point, and critical points and distances between them. Strip maps should be issued to each vehicle commander.

Before starting, each march unit has a designated team to reconnoiter its route to the start point and determine the amount of time needed to reach it. The company also forms a quartering party element. It links up with the battalion quartering party before moving to the new assembly area. The company quartering party is normally headed by the executive officer or first sergeant and consists of representatives from platoons, company headquarters, and attached elements if necessary. The battalion and company quartering parties move to the new assembly area before the main body moves. The quartering parties normally move by infiltration.

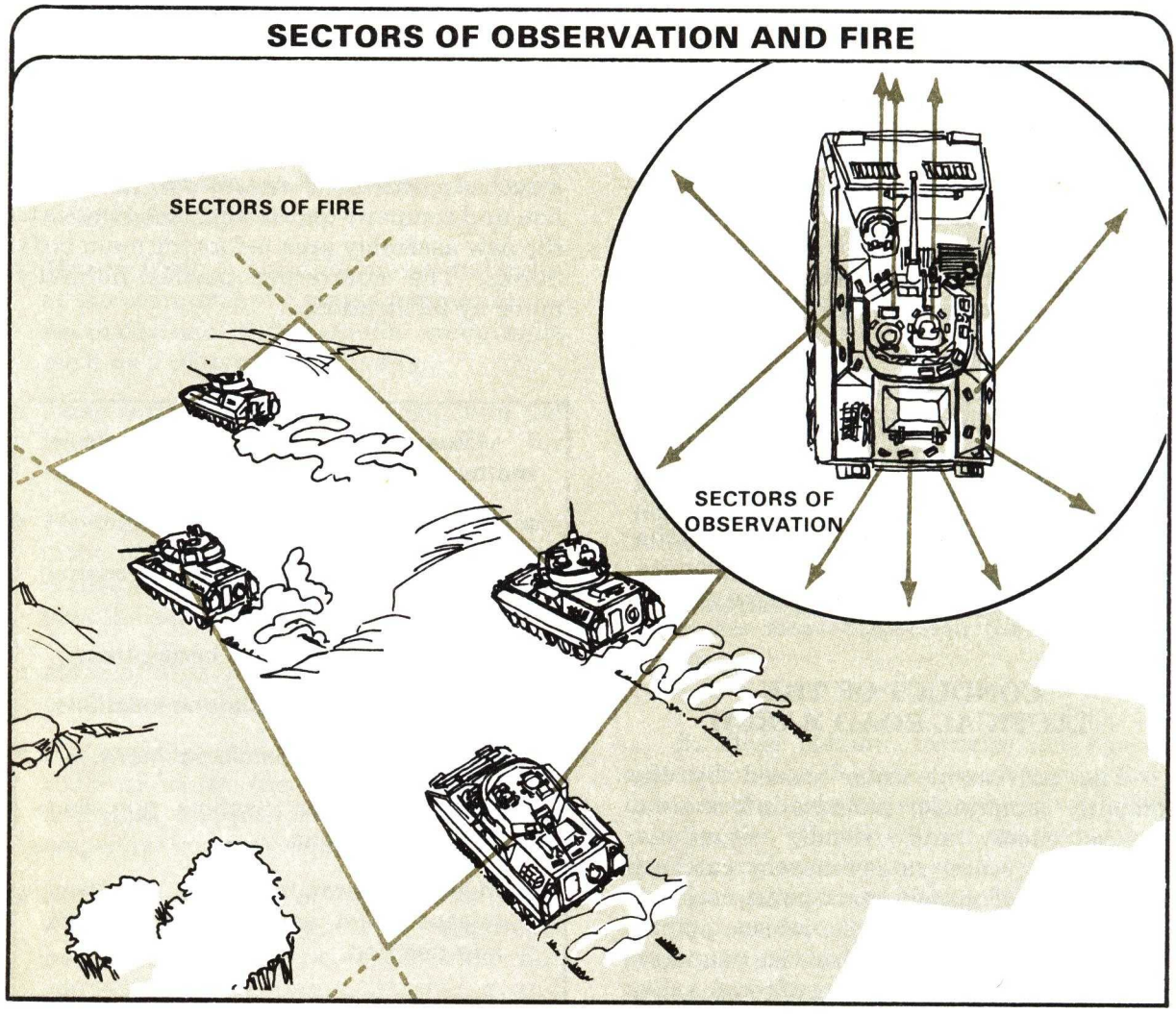
Quartering party activities are a matter of SOP but should include:

- **Securing the new assembly area.**
- **Searching for indications of enemy activity.**
- **Looking for mines and booby traps.**
- **Selecting routes to platoon locations.**
- **Selecting initial vehicle positions.**
- **Selecting initial machine gun and Dragon positions.**
- **Meeting platoons at the company release point and guiding vehicles into position.**

Although some movement and lining up may be required before starting the move to the SP, ideally vehicles move from their positions directly into their proper place in the march unit. The march unit should proceed to the SP without stopping, arrive there on time, and pass through the SP at the proper speed and interval between vehicles.

During the move, the crew of each BFV maintains 360-degree observation around the vehicle. The driver observes forward, the Bradley commander observes to the right of the 25-mm gun, and the gunner observes to the left of the 25-mm gun. The gunner and Bradley commander observe their assigned sectors regardless of the orientation of the turret. Troops inside the vehicle observe through their firing ports.

Within the platoon column, each vehicle is assigned a sector of fire for the move. Each vehicle orients its 25-mm gun so that it can rapidly fire on targets within its sector. The assignment of sectors of fire, coupled with the capability of firing from firing ports, provides the platoon with 360-degree security while on the move.



During the move, the platoon must be prepared to take action if attacked by enemy air, artillery, or ground forces. Passive measures against enemy air include maintaining proper interval between vehicles, staggering vehicle positions within the column to avoid linear patterns, camouflaging vehicles, and maintaining air observation.

If attacked by enemy air, vehicles in the column move from the axis of attack, either occupying covered and concealed positions or continuing to move, maintaining an evasive course. The unit also engages the aircraft with all available weapons.

If the column receives indirect fire during the move, button up the vehicle, mask, and move rapidly out of the impact area. Masking is necessary because the enemy can use a mix of HE and chemical ammunition to disrupt movement and achieve maximum casualties. After the company team is through the impact area, the march unit commander will start unmasking procedures.

If engaged by enemy ground forces while on a tactical road march, vehicles attempt to continue movement, or the platoon leader may elect to assault the enemy or fix the enemy for other forces to attack.

Because the primary mission of the unit is to move to a new location in preparation for future operations, additional actions against ground forces depend on the size of the enemy force and instructions from the company team/march unit commanders. If the enemy force consists of snipers or other disruptive forces equipped with small arms, the commander may pass through the force or dispatch a platoon to eliminate it. If the force is larger and presents a danger to the task force as a whole, fragmentary orders may be issued for march units to leave the route of march, move to covered and concealed positions, and conduct a hasty attack as if conducting a movement to contact.

A march unit can conduct three kinds of halts: **scheduled, unscheduled,** and **vehicle breakdown.**

Scheduled halts are planned for maintenance or rest, or to comply with higher level time schedules. At scheduled halts, vehicles pull to the side of the road but still maintain march distance between vehicles. Rifle teams dismount and establish local security.

Unscheduled halts are caused by unforeseen developments such as obstacles, ambushes, or other enemy activity forward of the platoon that prohibits further movement. If off-road movement is possible, the company team forms a coil for hasty perimeter defense. Platoons occupy a sector of the coil using the clock system. If off-road movement is not possible, the company team forms a herringbone. Rifle teams dismount in heavily wooded areas to improve local security.

When a **vehicle breakdown** occurs and a vehicle becomes disabled and cannot continue the move, the Bradley commander directs the driver off the road so as not to impede traffic. If the vehicle blocks the road, it is towed or pushed away to clear the road. Once the vehicle is clear of the road, the fighting vehicle crew attempts to repair the vehicle while the rifle team establishes security, provides guides, and directs traffic. The platoon to which the disabled vehicle belongs normally continues to move. If the vehicle is repaired and if the march unit has not passed completely, the squad rejoins the march unit at the tail end. If the march column has passed, or if the vehicle is not repaired, the squad waits for the serial's trail party. The trail party repairs the vehicle or tows it to the battalion assembly area (the location of battalion trains). (On occasion, when fighting strength is critical, the platoon will crossload the disabled vehicle's dismount team and squad leader.)

NOTE:

If the platoon leader's BFV is disabled, the platoon leader moves to another vehicle. If space is available, the FO team should be crossloaded.

On arrival at the battalion RP, the leader of the company team's quartering party moves from a concealed position and guides the march unit to the company RP. Platoon guides direct the platoon's vehicles to their general locations, where the squad leaders assume control and select vehicle positions. Vehicles should not stop on roads or in open fields, but should move directly into concealed positions. Normally, the first platoon in the column is guided to positions farthest away from the entrance into the assembly area. Succeeding platoons should move as far as possible into the assembly area, with the last platoon closing and securing the entrance.

If the company team must move into an unprepared assembly area, the clock system can be used to rapidly establish a perimeter defense and road security. Normally, direction of movement is 12 o'clock. The lead platoon usually takes up a third of the perimeter in the sector from 10 o'clock to 2 o'clock, with succeeding platoons breaking off left and right per company SOP.

When movement into an assembly area is conducted at night, platoon guides must use easily recognizable visual signals to insure the vehicles follow the proper guides. Use of different colored flashlight lenses is one method of identifying platoon guides.

SECTION II. ASSEMBLY AREAS

GENERAL

An assembly area (AA) is occupied by a unit to prepare for future operations. The mechanized infantry platoon normally occupies a portion of the company team AA. The assembly area is on defensible ground. It should provide concealment, room for dispersion, and good internal routes, as well as provide access to routes forward. Even though an AA is not expected to be a battle position, an all-round defense is organized with men and equipment positioned or dug in to provide security from ground and air attack. The amount of preparation at an AA depends on the unit's intended stay. Leaders insure that personnel continue to improve positions until they move out of the AA.

Priority of work at an AA is normally SOP, but it may be part of the movement or operation order. Although commanders may have differing priorities, the following, in the order listed, are normally included.

Establish Local Security. Establish local security by dispatching OPs, which should have wire communications with the platoon and be equipped with the M8 chemical-agent alarm. At platoon positions, local security is further achieved by alternating troops from work to watching, thus keeping roughly half the force providing security.

Position Vehicles and Crew-Served Weapons. These should be placed where they can best be employed. If Dragons cannot be employed because of terrain restrictions, they should not be dismounted.

Establish Communications. Establish communications within the platoon and to the company CP. The platoon sets up a hot loop, connecting the squads to the platoon leader's vehicle by telephone (TA1/PT). To speed the establishment of telephone communications, the platoon leader can take a member of the platoon headquarters element with him to the company CP. As he returns to the platoon AA, a land telephone line can be reeled out from the company CP back to his vehicle. Also, the platoon leader has a person who knows where the company CP is should a messenger be needed. In the AA, radio use at platoon and squad level should be restricted to radio listening silence.

Position Remaining Squad Members. As in the defense, the remaining squad members

are positioned to provide security for crew-served weapons, to cover dead space, and to cover avenues of approach. Dismounted troops should initially prepare hasty fighting positions.

In preparation of positions, they should clear fields of fire and tie in fire between squads and platoons so that uncovered gaps do not exist in the defense. They should then prepare range cards for vehicle-mounted weapons and dismount crew-served weapons, and prepare a platoon sector sketch and forward a copy to the company CP. The hasty fighting positions should then be camouflaged by using the appropriate camouflage screens for vehicles and natural material for infantry fighting positions.

Rest and Improve Defenses. Once the basics are accomplished, squads can alternate rest periods while working to improve the defense. Efforts to improve the defense include digging fighting positions and providing overhead cover, setting out remote sensors, and establishing security patrols.

ACTIONS IN ASSEMBLY AREAS

Assembly areas provide the unit a secure defensible position where the unit can prepare for future operations. During and after the establishment of the defense, the following activities may take place:

- **Leaders receive and issue orders.**
- **The unit maintains its equipment and weapons.**
- **Personnel conduct personal hygiene.**
- **Leaders inspect.**
- **The unit is resupplied to include distribution of ammunition and refueling of vehicles.**
- **The unit rehearses critical aspects of the upcoming operation.**
- **Weapon systems are checked and small arms are test fired, if possible.**
- **Troops eat and rest.**

APPENDIX H

Weapons and Fighting Positions

SECTION I. WEAPONS

GENERAL

To succeed in combat, soldiers must know the characteristics of their weapons and how to use them. This appendix discusses weapons and fighting positions used by mechanized infantry platoons.

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I. Weapons	H-1
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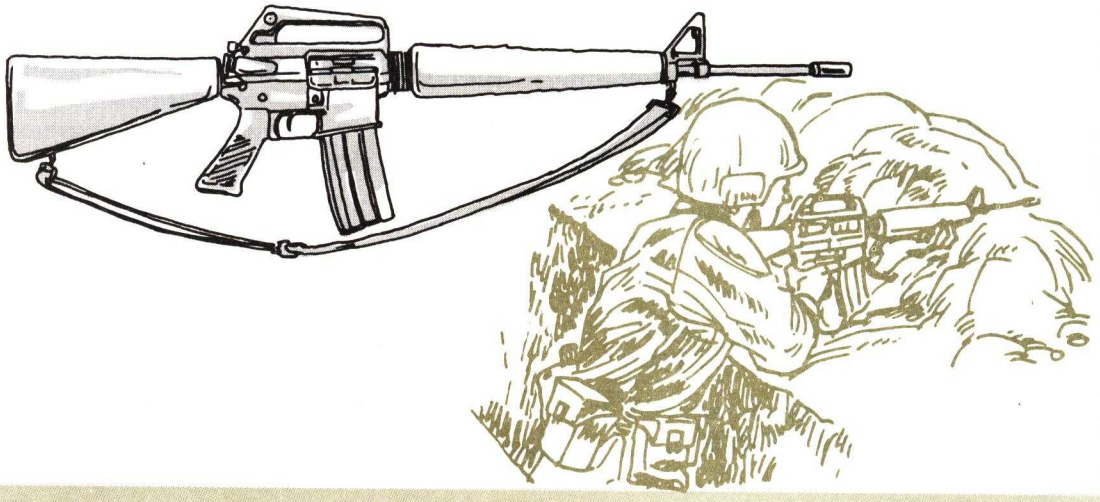
M16A1 RIFLE

General. The M16A1 rifle is a 5.56-mm, magazine-fed, gas-operated weapon. It has a selector lever that allows the rifle to be fired semiautomatic or automatic. The most stable firing positions (those increasing the probability of target hits) are the prone supported or foxhole supported for semiautomatic fire.

M16A1 RIFLE



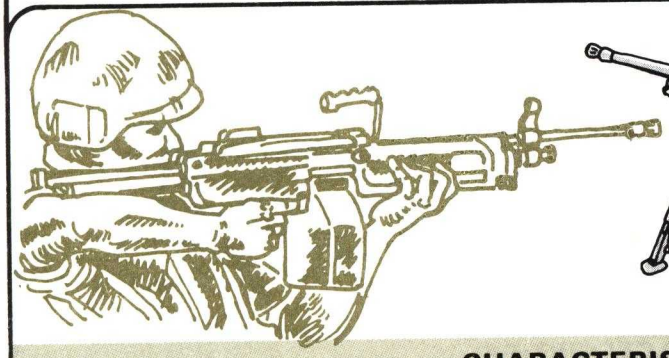
CHARACTERISTICS

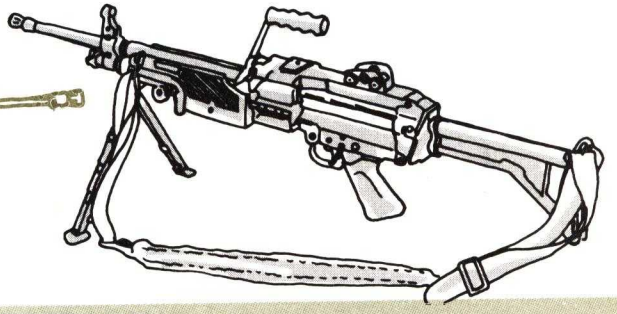
Weight (loaded)	20-round magazine — 3.5 kilograms (7.6 pounds). 30-round magazine — 3.6 kilograms (7.9 pounds).
Length (w/o bayonet)	99 centimeters (39 inches).
Ranges at which a 50-50 chance of target hit can be expected:	Moving target — less than 200 meters. Stationary target — 250 meters.
Maximum range of grazing fire	350 meters.
Maximum range	2,653 meters.
Rate of fire	Sustained (semiautomatic) — 12 to 15 rounds per minute.

M249 SQUAD AUTOMATIC WEAPON

General. The M249 SAW is a 5.56-mm, belt- or magazine-fed, gas-operated, automatic weapon. It has a selector switch that allows the weapon to be operated at two rates of fire. The normal method of fire is prone with the SAW supported by the bipod. When the gunner is standing, the weapon may be shot from the hip, underarm, or shoulder.

M249 SQUAD AUTOMATIC WEAPON





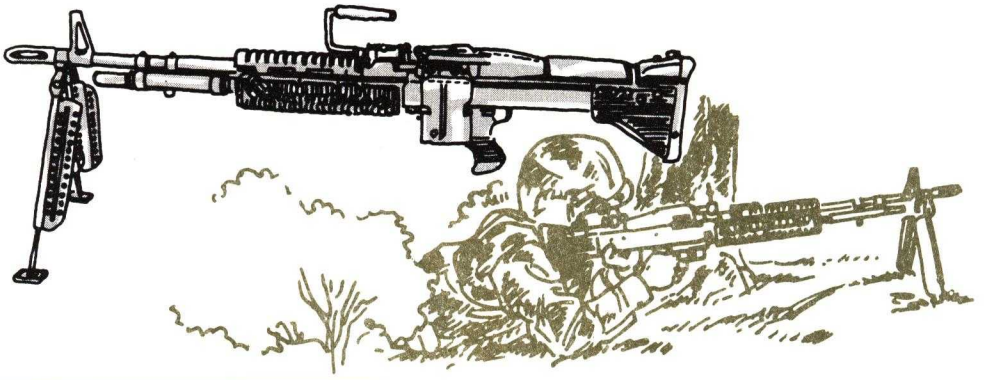
CHARACTERISTICS

Weight	SAW — 6.9 kilograms (15.3 pounds). Ammunition, 200 rounds — 3.1 kilograms (6.9 pounds).
Length	103 centimeters (40.55 inches).
Maximum range	3,600 meters.
Tracer burnout	900 meters.
Maximum range of grazing fire	670 meters.
Ranges at which a 50-50 chance of target hit can be expected shooting bursts of 6 to 9 rounds	Point target — 600 meters (bipod mounted). Area target — 800 meters (bipod mounted).
Rates of fire	Normal — 750 rounds per minute Maximum — 1,000 rounds per minute
Types of ammunition	Ball Tracer.

M60 MACHINE GUN

General. The M60 machine gun is a 7.62-mm, belt-fed, gas-operated, automatic weapon. It has an attached bipod mount and a separate tripod mount. The most accuracy is gained firing from the prone position with the M122 tripod. Some vehicular mounts (such as the pedestal mount on the M151 jeep) are also available for this gun. When the gunner is standing, the gun may be shot from the hip, underarm, or shoulder.

M60 MACHINE GUN



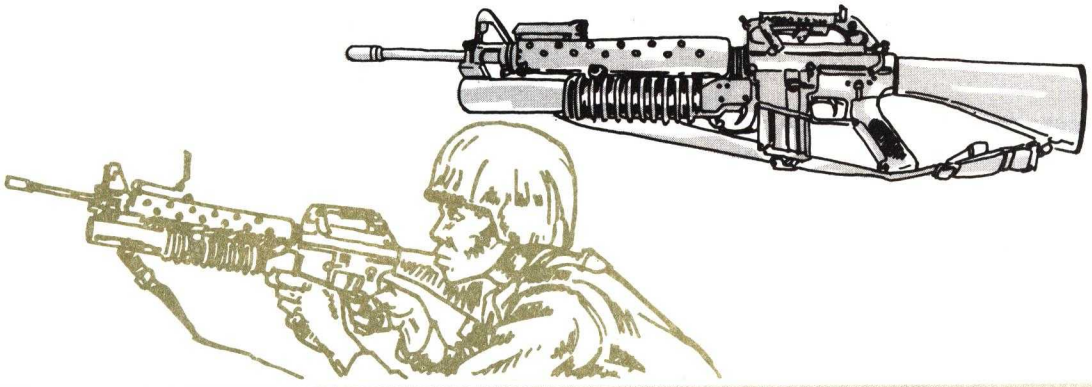
CHARACTERISTICS

Weight	Machine gun — 10.4 kilograms (23 pounds). Tripod with traversing and elevating mechanism — 8.8 kilograms (19.5 pounds). Ammunition, 300 rounds — 9.5 kilograms (21 pounds).
Length	110.5 centimeters (43.5 inches).
Maximum range	3,725 meters.
Tracer burnout	900 meters.
Maximum range of grazing fire	600 meters.
Ranges at which a 50-50 chance of target hit can be expected shooting bursts of 6 to 9 rounds	Moving target — 200 meters (bipod mounted). Point target — 600 meters (bipod or tripod mounted). Area target — 800 meters (bipod mounted). Area target — 1,100 meters (tripod mounted).
Rates of fire	Sustained — 100 rounds per minute (barrel change required every 10 minutes). Rapid — 200 rounds per minute (barrel change required every 10 minutes). Cyclic — 550 rounds per minute (barrel change required every minute).
Types of ammunition	Ball. Tracer. Armor-piercing.

M203
(40-MM GRENADE LAUNCHER)

General. The M203 40-mm grenade launcher is a single-shot, breech-loaded, pump-action weapon. It is attached to an M16A1 rifle. The grenade launcher fires a variety of ammunition. It can suppress targets that are in defilade; suppress or disable armored vehicles, except tanks; penetrate concrete, timber, or sandbagged weapon positions and some buildings; illuminate; and signal. The firing positions with the most stability are the standing supported and prone supported.

GRENADE LAUNCHER M203



CHARACTERISTICS

Weight (loaded; rifle and grenade launcher) — 4.98 kilograms (11 pounds).

Length — 99 centimeters (39 inches).

Ranges at which a 50-50 chance of target hit can be expected — Area target (25-meter circle) — 350 meters.

Point target:
- Vehicle, weapon position — 200 meters.
- Window opening — 125 meters.
- Bunker aperture — 50 meters.

Maximum range — 400 meters.

Minimum safe firing ranges (HE and training practice) — Training — 80 meters.
Combat — 31 meters.

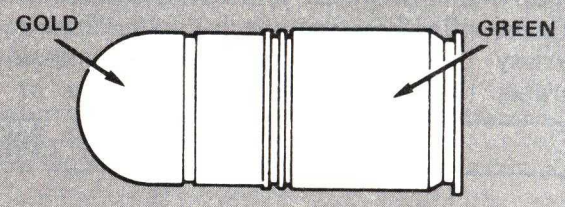
Minimum arming range — 14 to 38 meters.*

Basic load for grenadier — 40-mm grenades — 36 rounds.
5.56-mm ball — 140 rounds.

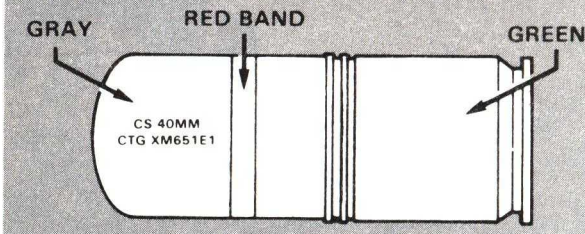
*To be considered in close-in firing, as in towns and jungles, to insure that the round will explode.

M203 AMMUNITION

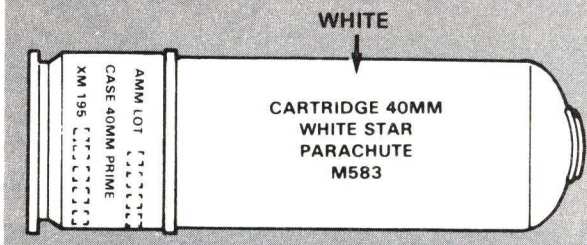
M433 high explosive dual-purpose. This round can penetrate 5 centimeters (2 inches) of armorplate, 30 centimeters (12 inches) of pine logs, 40 centimeters (16 inches) of concrete blocks, or 50 centimeters (20 inches) of sandbags at a range up to 400 meters. It has a 5-meter casualty radius against exposed troops.



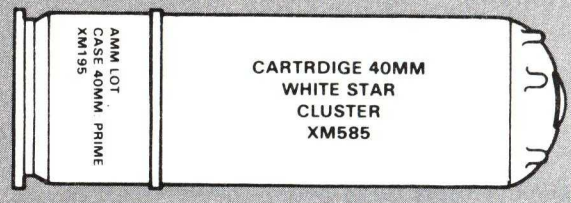
M651 CS (a chemical agent). This round is used to drive the enemy from bunkers or enclosed positions in built-up areas.



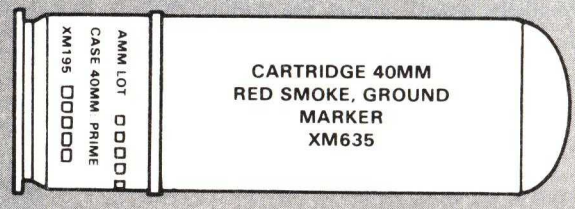
M583 white star parachute/M661 green star parachute/M662 red star parachute. This is used to signal and illuminate. It can be placed 300 meters forward of a squad to illuminate an area 200 meters in diameter for 40 seconds.



M585 white star cluster/M663 green star cluster/M664 red star cluster. This is used to signal. (The green star cluster may appear white in bright sunlight.)



XM635 ground smoke. This is used to spot locations, not for screening. It comes in red, yellow, and green. The burst height is 105 meters (350 feet).

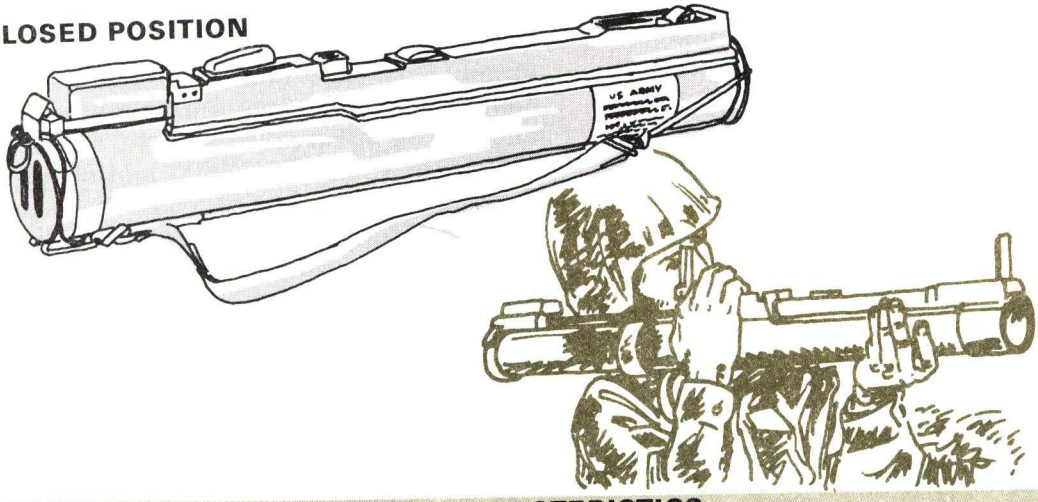


M72A2 LIGHT ANTITANK WEAPON

General. The M72A2 LAW, a lightweight, self-contained unit, consists of a 66-mm HEAT rocket in a disposable fiberglass and aluminum launcher tube. Because it can penetrate more than 30 centimeters (12 inches) of armor, the LAW can be used against armor, bunkers, and other hard targets out to a range of 200 meters. The most stable firing positions for the LAW are the standing supported, prone, and prone supported.

M72A2

CLOSED POSITION



CHARACTERISTICS

Length	**Closed — 66 centimeters (26 inches). Extended — 89 centimeters (35 inches).**
Maximum range	**1,000 meters.**
Ranges at which a 50-50 chance of target hit can be expected	**Stationary target — 200 meters. Moving target — 165 meters.**
Minimum arming range	**10 meters.**

Methods of Engagement for the LAW. There are four methods of engagement, single, sequence, pair, and volley firing. The best methods are volley and pair firing.

Single Firing

One gunner with one LAW shoots at a target. This method is used only at ranges of 50 meters or less. Beyond this range, single firing is ineffective as the chance of a first-round kill is low.

Sequence Firing

One gunner with two or more LAWs shoots at a target. Before he shoots, he should extend several launchers. After firing the

first LAW, he notes its impact. If he gets a hit, he continues to shoot using the same sight picture until the target is destroyed. If the first round is a miss, he should adjust the range and lead of succeeding rounds until he gets a hit. He then continues to shoot until the target is destroyed.

Pair Firing

One at a time, two or more gunners with two or more LAWs shoot at a target. Each gunner prepares several LAWs. The gunners swap information when shooting at the target. The first gunner seeing a target identifies it, announces the estimated range and lead he will use (for example, TANK, 150 METERS, FAST TARGET) and shoots. If the first gunner has a miss, the second gunner quickly announces a revised estimate of range and lead (if appropriate) and shoots. The gunners continue exchanging range and lead information until one gets a hit. Once the range and lead have been found, all gunners, on command, shoot at the target until it is destroyed. Pair firing is preferred over sequence firing as it lets gunners get target hits faster; that is, gunners firing the subsequent shots can be ready to shoot as soon as the previous round impacts. In sequence firing, the gunner must get another LAW, establish a sight picture, and shoot. Pair firing also has the advantage of having two or more gunners track the same target.

Volley Firing

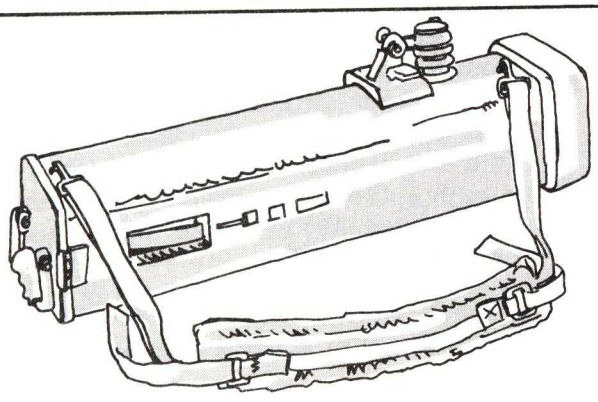
Two or more gunners with one or more LAWs shoot at a target at the same time. Shots are fired on command or on signal until the target is destroyed (for example, TANK, 100 METERS, SLOW TARGET, VOLLEY FIRE, READY, AIM, FIRE). Each gunner prepares two or more LAWs. Volley firing is used only when the range to the target and the lead have been determined. Range can be determined by map, by pacing, or from the results of pair firing after a target has been hit. The volley firing method is best because

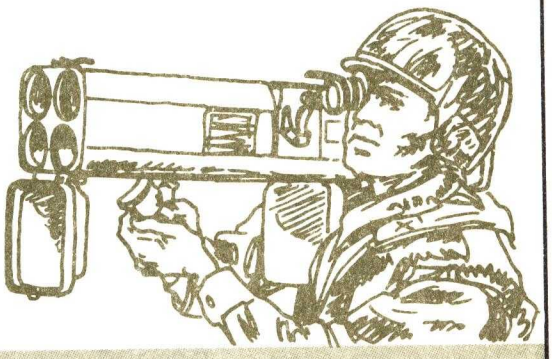
more rounds are shot at a target at one time. This increases the chance of a hit, but it also increases the chance of being detected.

M202A1 MULTISHOT ROCKET LAUNCHER 66-MM

General. The M202A1 multishot rocket launcher 66-mm (Flash) is a lightweight, four-tube, 66-mm rocket launcher. It is aimed and shot from the right shoulder in the standing, kneeling, or prone position. It can shoot a single rocket or shoot up to four rockets semiautomatically at the rate of one rocket per second. Reloading is done with a new clip of four rockets. The brilliant splash of the bursting incendiary warhead makes it a good weapon to suppress RPGs and Saggers. When it impacts near enemy vehicles, it will make them button up. The most stable position from which to fire the Flash is the standing supported position. When firing from a foxhole, there are two limitations. First, overhead cover can limit the elevation of the rocket launcher and therefore the range. Second, when elevating the rocket launcher, the gunner must insure that the rear of the launcher is outside the hole so that its backblast is not deflected on himself.

MULTISHOT ROCKET LAUNCHER





CHARACTERISTICS

Weight (loaded) — 12.1 kilograms (26.6 pounds).

Length — Closed — 68.5 centimeters (27 inches).
Extended — 88.9 centimeters (35 inches).

Ranges at which a 50-50 chance of target hit can be expected — Area target (25-meter circle) — 500 meters.
Point target:
- Stationary vehicle, uncovered position — 200 meters.
- Window opening — 125 meters.
- Bunker aperture — 50 meters.

Minimum arming range — 6 to 13 meters.

Bursting radius of rocket warhead — 20 meters.

M47 DRAGON MEDIUM ANTITANK WEAPON

General. The Dragon is a line-of-sight wire-guided missile system. In its lightest configuration, it has two major components, the tracker and the ammunition. The ammunition consists of the launcher with the missile package inside. The launcher is the handling and carrying container as well as the tube for firing the missile. The tracker is the reusable part of the system. The launcher is destroyed and discarded after firing.

Firing the Dragon. To fire the Dragon, the antiarmor specialist looks through the sight and puts the crosshairs on the target. He keeps the crosshairs on the target and fires. By keeping the crosshairs on the target, the missile is guided to the target by the wire link. The tracker detects deviations from the gunner to target, line of sight, and direction of the missile, and sends corrections to the missile system,. The missile system responds to corrections by firing jets along its sides to change its direction.

Firing Configurations. The Dragon is fired dismounted using the bipod or tripod mounts.

Dismounted Bipod

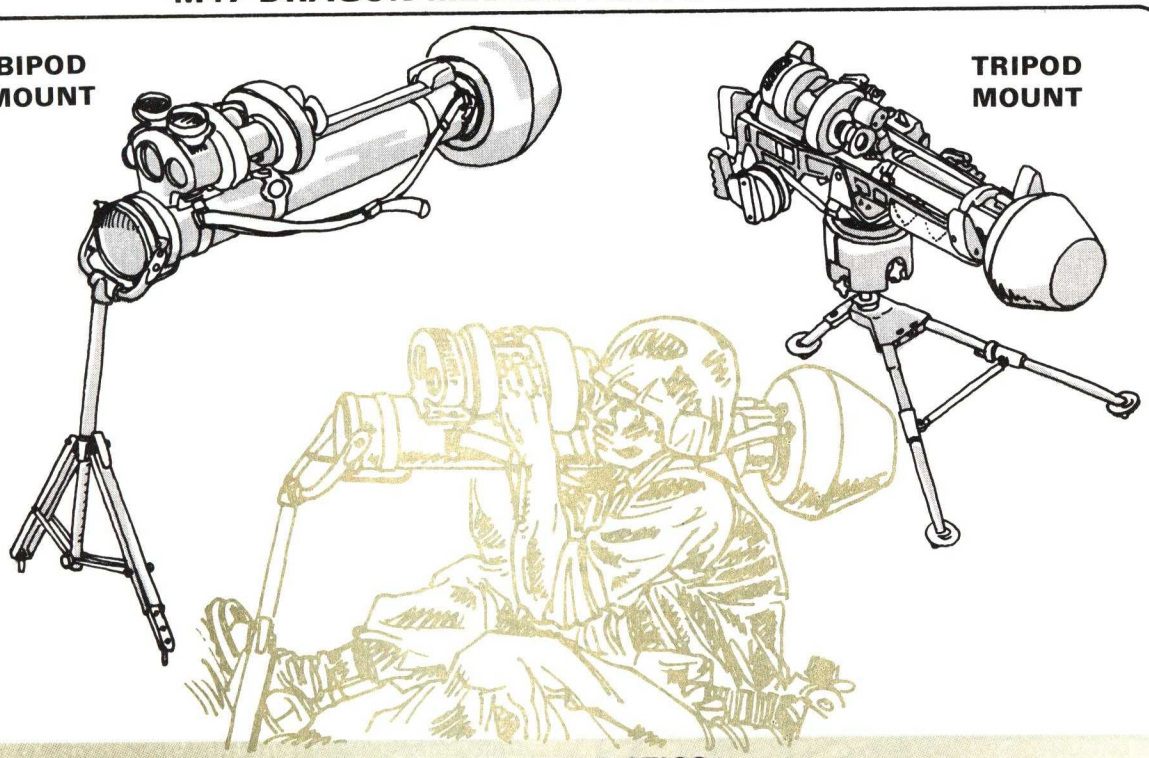
When establishing a hasty defense or when used in dismounted movement, the Dragon may be fired using the bipod attached to the launch tube. Using this method, the Dragon gunner takes a sitting position with the weapon on his shoulder. The tracker crosshairs are kept on target by moving the shoulder and body.

Dismounted Tripod

When equipped with the M175 mount, the cradle and damper assembly can be installed on an M3 (caliber .50 machine gun) tripod, or an M122 (M60 machine gun) tripod, by using the tripod adapter. The tripod

adapter is used to install the cradle in the tripod. The launcher and tracker are then locked into the cradle. The target is then tracked and fired at using the elevation damper-assembly handle and the remote firing-mechanism handle. The functioning of the missile remains the same. Using the tripod method provides a more stable base and smoother tracking for the antiarmor specialist.

M47 DRAGON MEDIUM ANTITANK WEAPON



CHARACTERISTICS

Weight	Total (day tracker) — 14.5 kilograms (31.9 pounds). Tracker (day) — 3.1 kilograms (6.8 pounds). Tracker (night) — 9.36 kilograms (20.6 pounds). Round — 11.4 kilograms (25.2 pounds).
Length	115.4 centimeters (45.5 inches).
Diameter	29.2 centimeters (11.5 inches).
Range	Minimum — 65 meters. Maximum — 1,000 meters.
Tracker	electro-optical with 6-power magnification.

SECTION II. FIGHTING POSITIONS

GENERAL

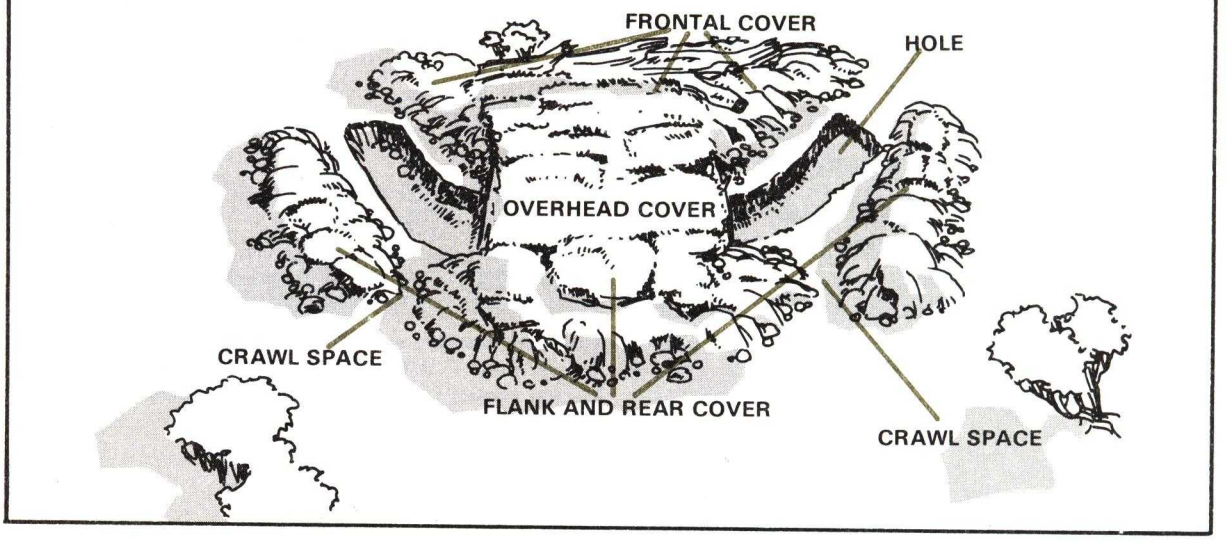
Whenever the rifle team dismounts to conduct the defense, it prepares fighting positions. A well-built fighting position gives the defender a marked advantage over the attacker and enhances his weapons' firing capability. Fighting positions must provide cover and concealment against aerial and ground fire and observation, and provide for mutual support among fighting positions' observation and fields of fire.

Cover. Protection from enemy weapons' effects reduces the chances of casualties. The best way to gain this protection is use of cover.

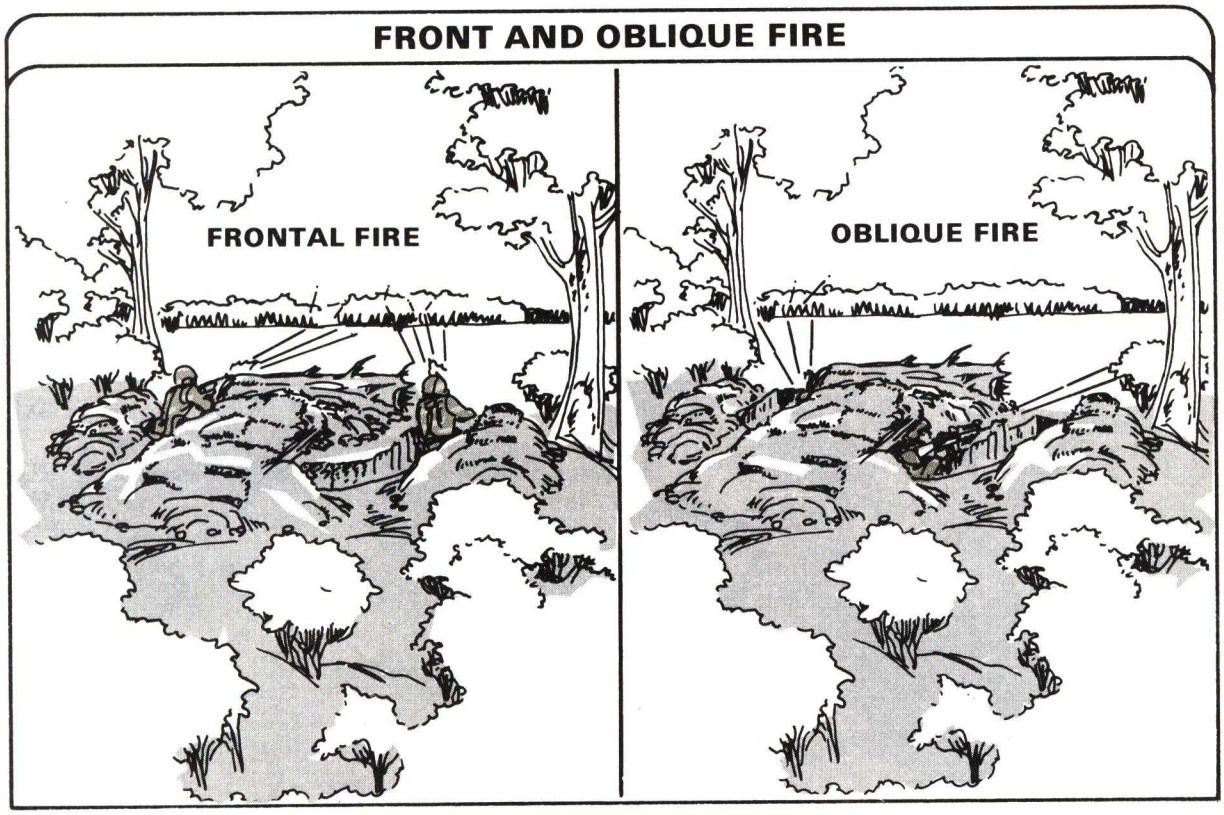
Frontal cover must be thick enough (at least 46 centimeters [18 inches] of dirt) to stop small arms fire, high enough to cover the heads of the men shooting from it, and far enough in front of the hole to allow room for elbow rests and sector stakes so that the men can fire to the oblique. Oblique shooting requires that the cover be long enough for two men and hides the muzzle blasts of their rifles.

To have complete protection, overhead, flank, and rear cover is required. This protects against indirect fire that bursts overhead, to the flanks, or to the rear of the position. It also protects against the effects of friendly weapons supporting from the rear; for example, small arms fire or discarded sabots from tank gun rounds.

PROTECTIVE COVER



A position's cover should be such that when the position comes under frontal fire, the troops can move behind the frontal cover and shoot to the oblique.

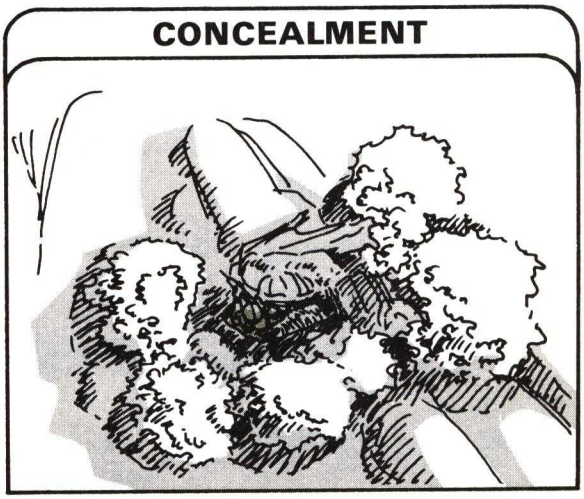


Concealment. No matter how much protection a position may have, the enemy may be able to defeat the defender if the defender's position is easy to see. Positions must be well hidden so that the enemy will have a hard time seeing them even though he may be in hand-grenade range.

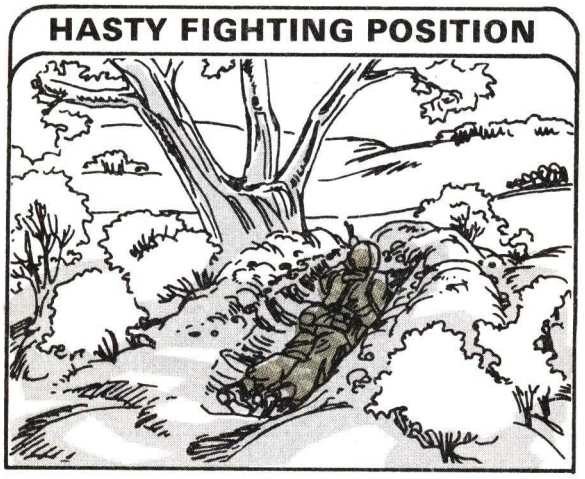
Natural concealment is better than man-made because it is readily available, it is less likely to attract the enemy's attention, and it need not be replaced.

While digging positions, soldiers should take care not to disturb the natural cover and concealment. The dirt dug out can be used to build cover. Unused dirt is put behind positions and camouflaged.

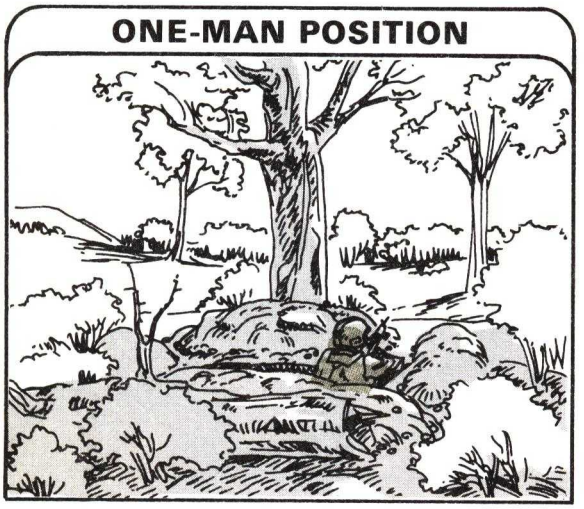
Positions should be concealed from enemy aircraft as well as from ground troops. If positions are under bushes, trees, or in buildings, they are less likely to be seen from above. Leaves, straw, or grass should be placed on the floor of the hole to keep the fresh earth from contrasting with the ground around it. Sticks should not be used, since they may stop grenades from rolling into the grenade sumps.



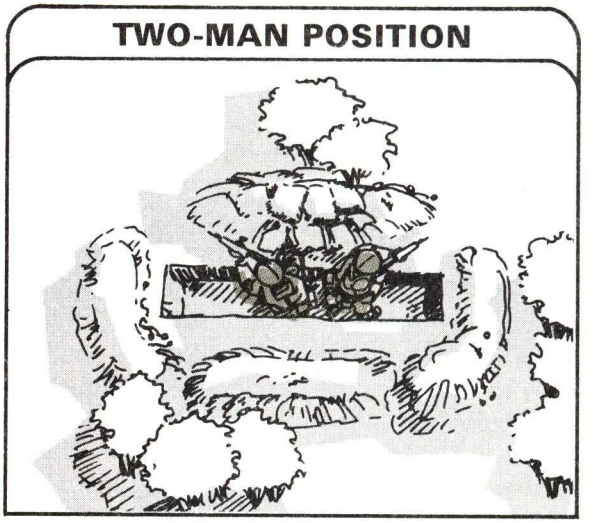
Variations in Fighting Positions. A hasty fighting position is prepared when time available is insufficient to prepare a deliberate fighting position. It is put behind whatever cover is available. It should give frontal protection from direct fire and still allow shooting to the front and oblique. For protection from indirect fire, a hasty fighting position should be in a small depression or in a hole at least half a meter (18 inches) deep.



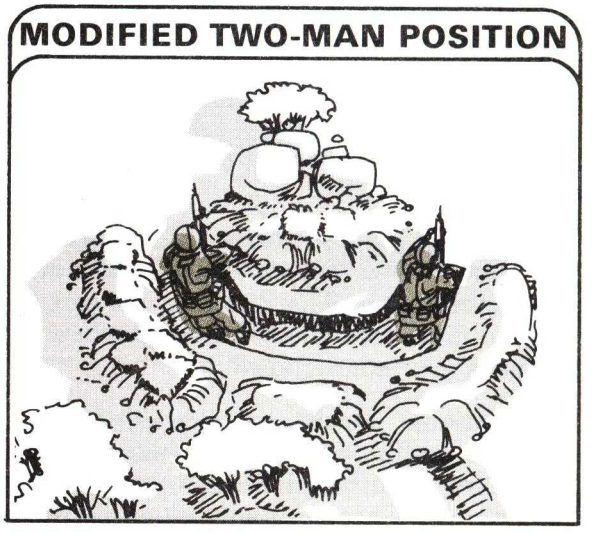
A one-man fighting position allows flexibility in the use of cover because the hole only has to be long enough for one man and his gear. It must let a soldier shoot to the front or to the oblique from behind frontal cover.



A two-man fighting position provides better security than a one-man fighting position. It should give frontal protection from direct fire and allow shooting to the front and oblique.

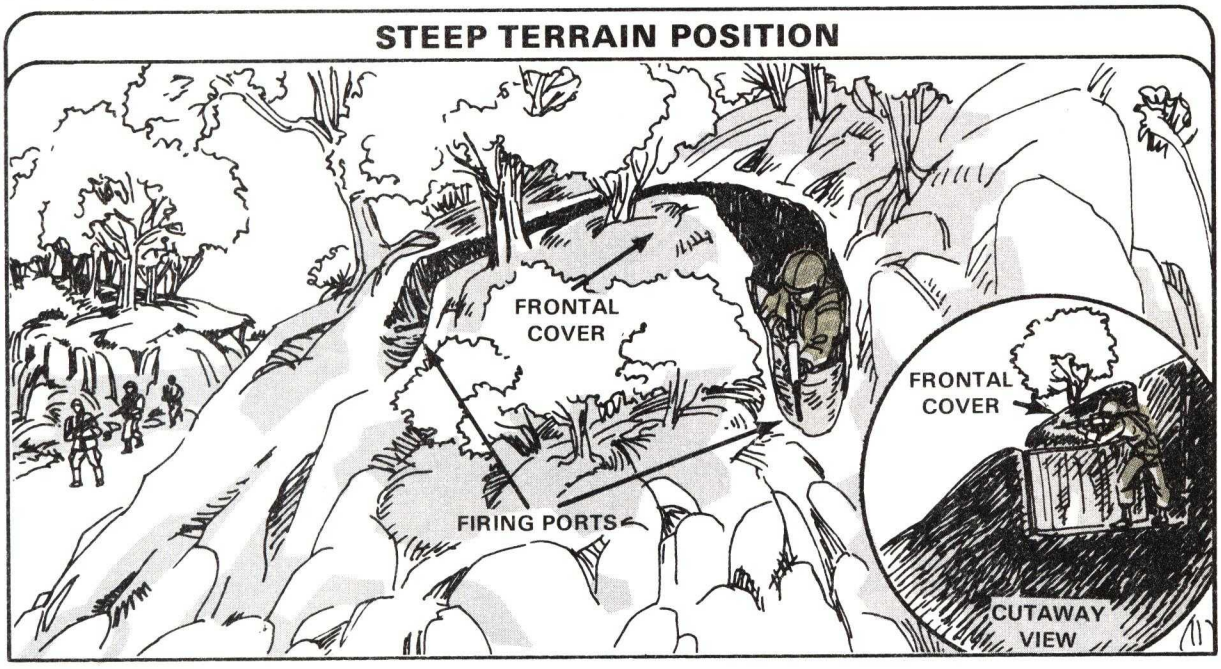


A modified two-man fighting position may be prepared in close terrain, where grazing fire and mutual support extend no farther than to an adjacent position, or prepared to cover dead space just in front of the position. This is done by extending one or both ends of the hole around the sides of the frontal cover.



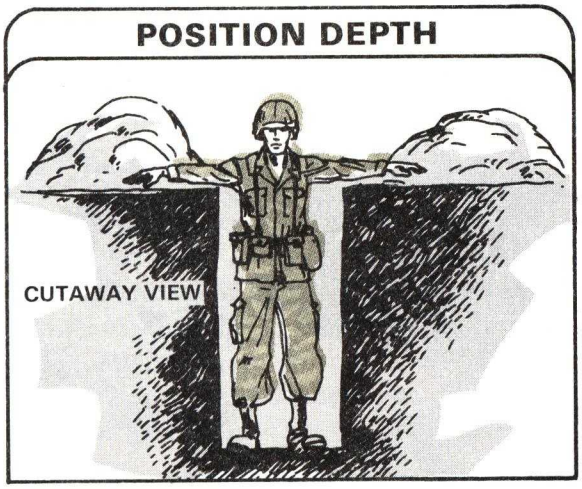
Positions on Steep Terrain. On a steep slope, a soldier in a hole behind frontal cover cannot shoot attackers without standing up and exposing himself too much.

To overcome this, the hole is dug and firing ports are dug out at each end of the hole. The ground between the firing ports then serves as frontal cover for the position.



PREPARING FIGHTING POSITIONS

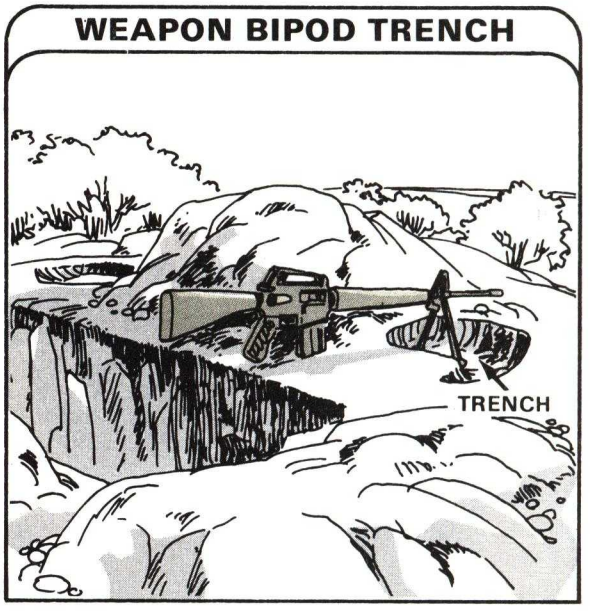
General. Dig it armpit deep to lower the profile of the men and still let them shoot their weapons.



Provide support by having a distance between the hole and the frontal cover that should be enough to let a soldier shoot from a supported position (elbows on the ground).

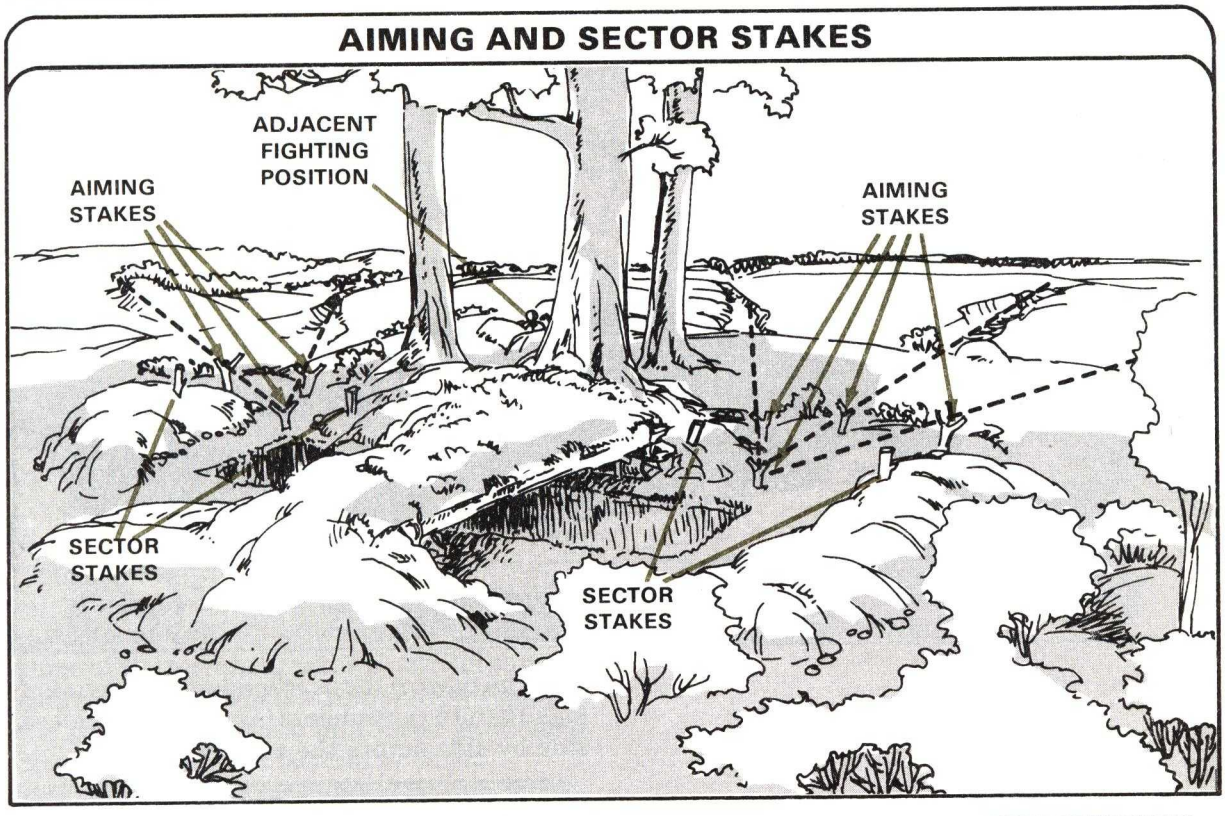
Dig elbow holes that serve to stabilize the shooter's arms and lower his profile.

Dig trenches for the bipod legs of an automatic rifle to get it close to ground level.



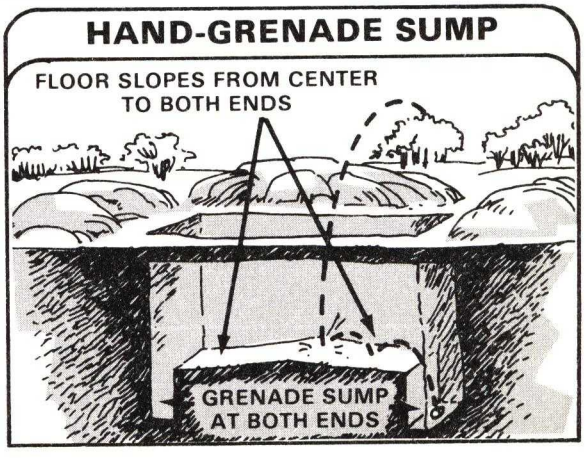
Use aiming stakes to help a soldier fire his rifle on dangerous approaches at night.

Use sector stakes, right and left, to define the sector of fire. They prevent accidental shooting into adjacent positions. A soldier should not let stakes spoil his position's concealment.



Shape the floor of the hole so that it slopes toward the grenade sumps. Water will run into the sumps and grenades will tend to roll into them.

Dig two trench-shaped hand-grenade sumps at each end of the position. The trenches should be dug as wide as the blade of an intrenching tool, at least as deep as the intrenching tool, and as long as the position is wide. The slope of the floor should channel grenades thrown into the position into one of the sumps.

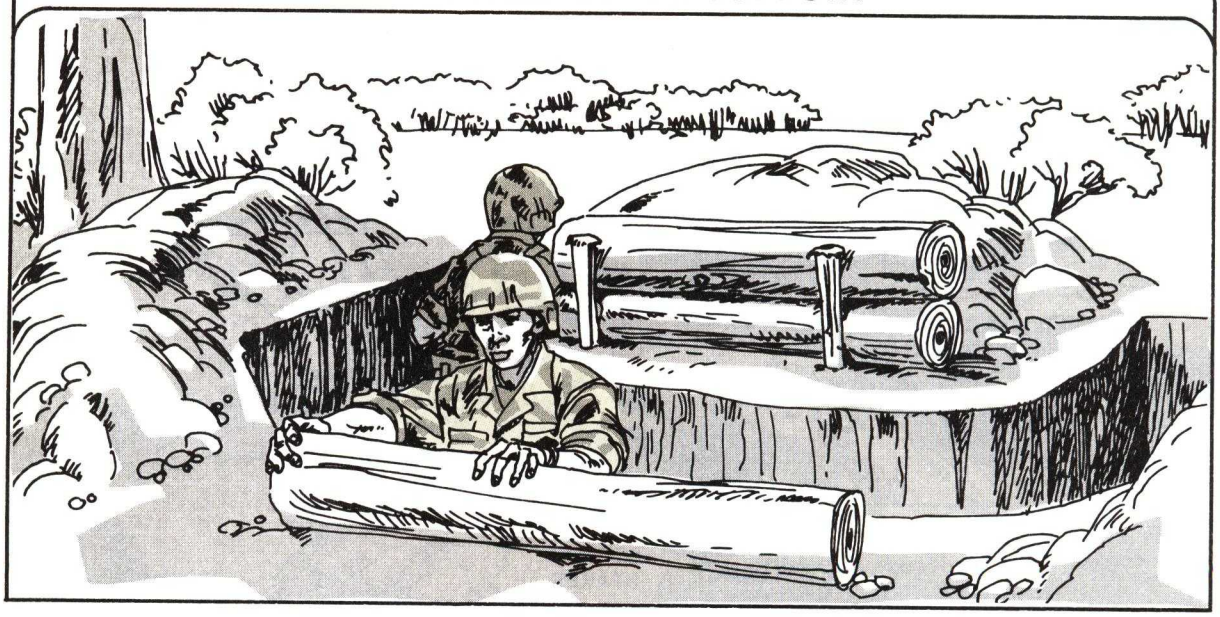


Building Overhead Cover. Frontal, flank, and rear cover, and the hole give some protection from shell fragments; but overhead cover should be built to protect from airbursts. A good position has overhead cover that lets a man fire from underneath it.

Support for overhead cover is built by placing logs 10 to 15 centimeters (4 to 6 inches) on top of each other along the entire length of the frontal and rear cover.

The front supports are high enough so that men can shoot from beneath the overhead cover when it is completed.

OVERHEAD COVER SUPPORT

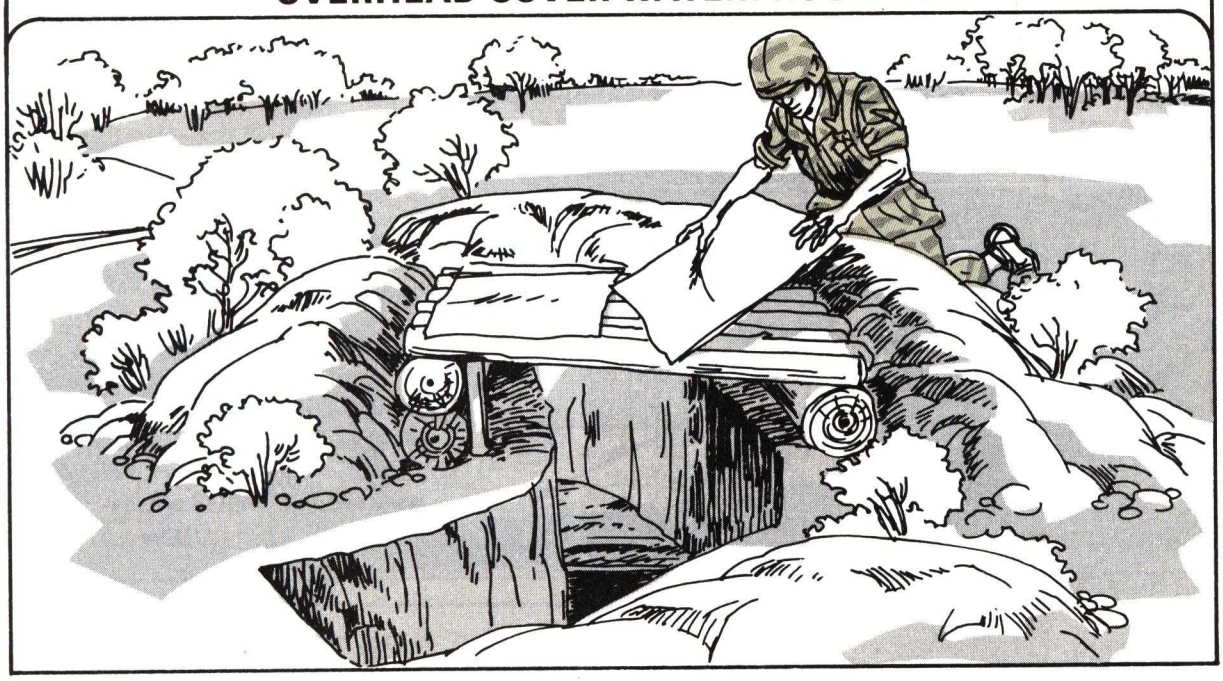


The base of the overhead cover is made of logs 10 to 15 centimeters (4 to 6 inches) placed side by side across the supports.

OVERHEAD COVER BASE

A water-repellent layer, such as waterproof packing material from Dragon rounds is then laid over the logs.

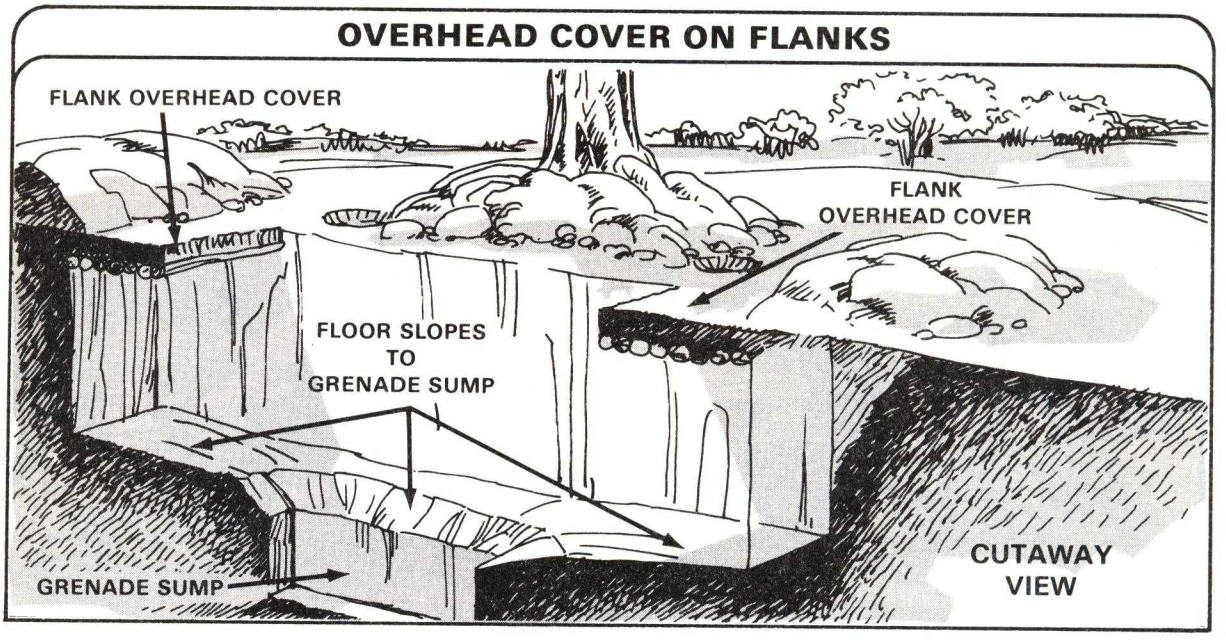
OVERHEAD COVER WATERPROOFING



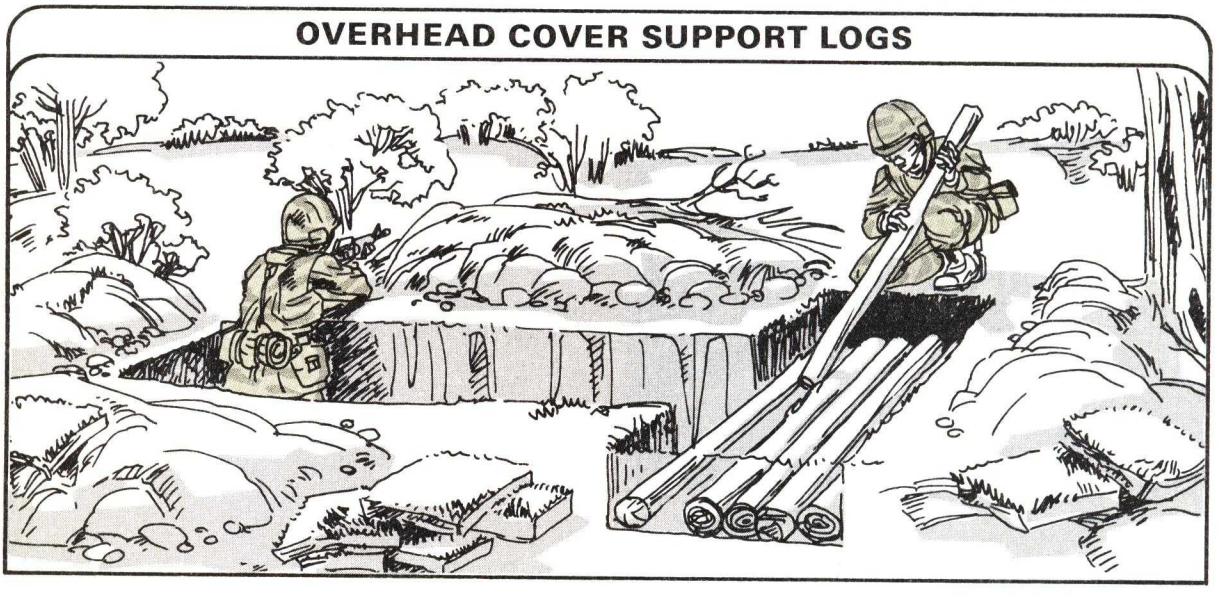
About 15 to 20 centimeters (6 to 8 inches) of dirt is added and molded to blend with the slope of the terrain and the overhead cover is camouflaged. When it is complete, the man in the position will have protection from shell fragments and still be able to shoot.

COVER CAMOUFLAGED

When overhead cover would make a position easy to see, it can be built off to both flanks.

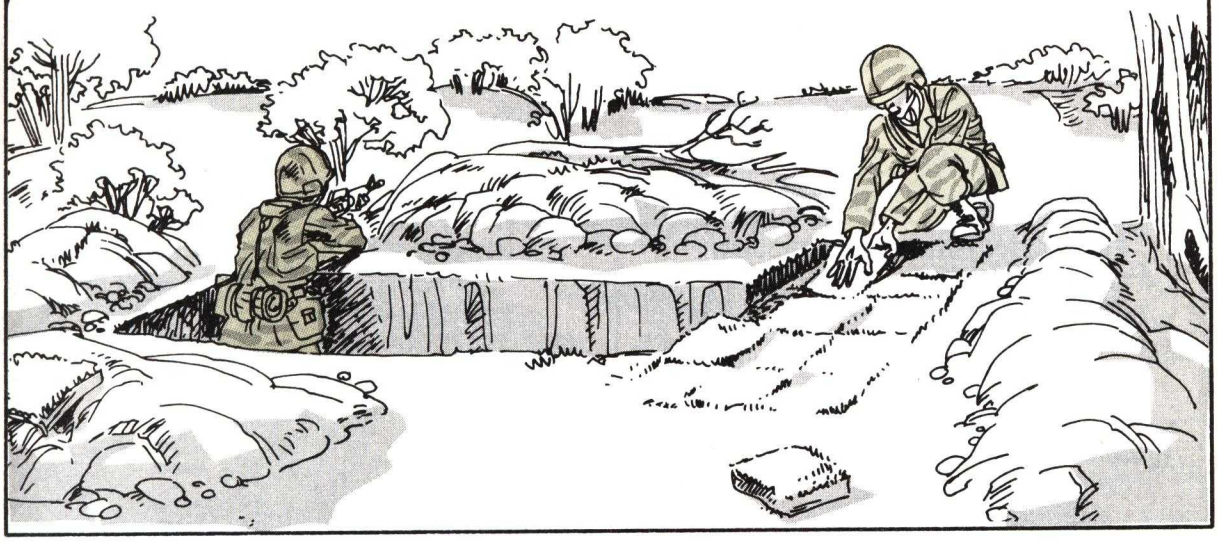


After removing sod and 25 to 35 centimeters (10 to 14 inches) of dirt, 10 to 15 centimeters (4 to 6 inches) of supporting logs or planks are laid across that place to support the rest of the overhead cover material.



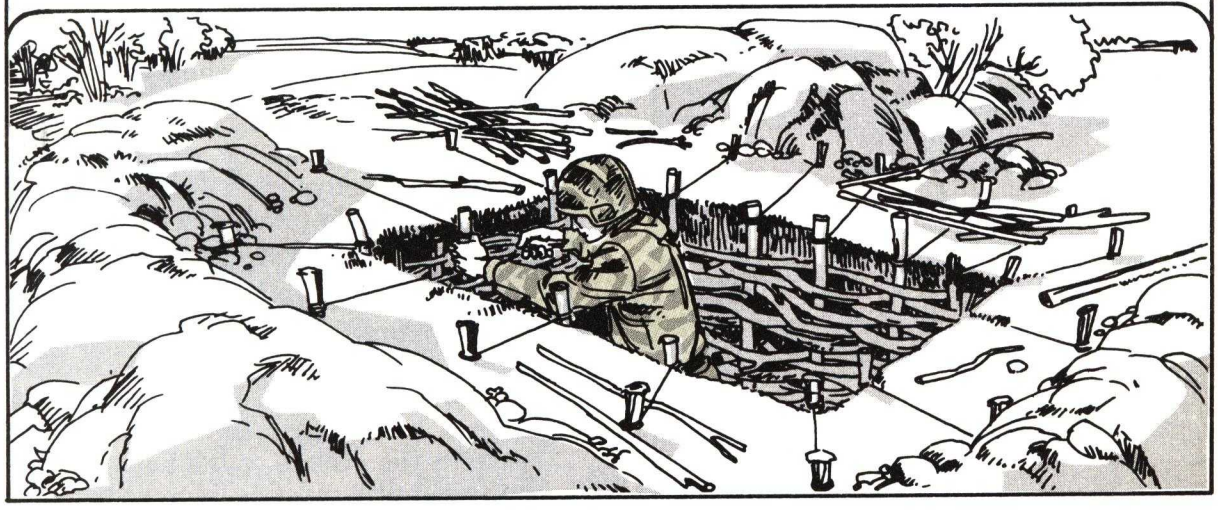
The logs are covered by piling 15 to 20 centimeters (6 to 8 inches) of dirt on them. Sod is used to camouflage the dirt. It all must look natural.

SOD CAMOUFLAGE



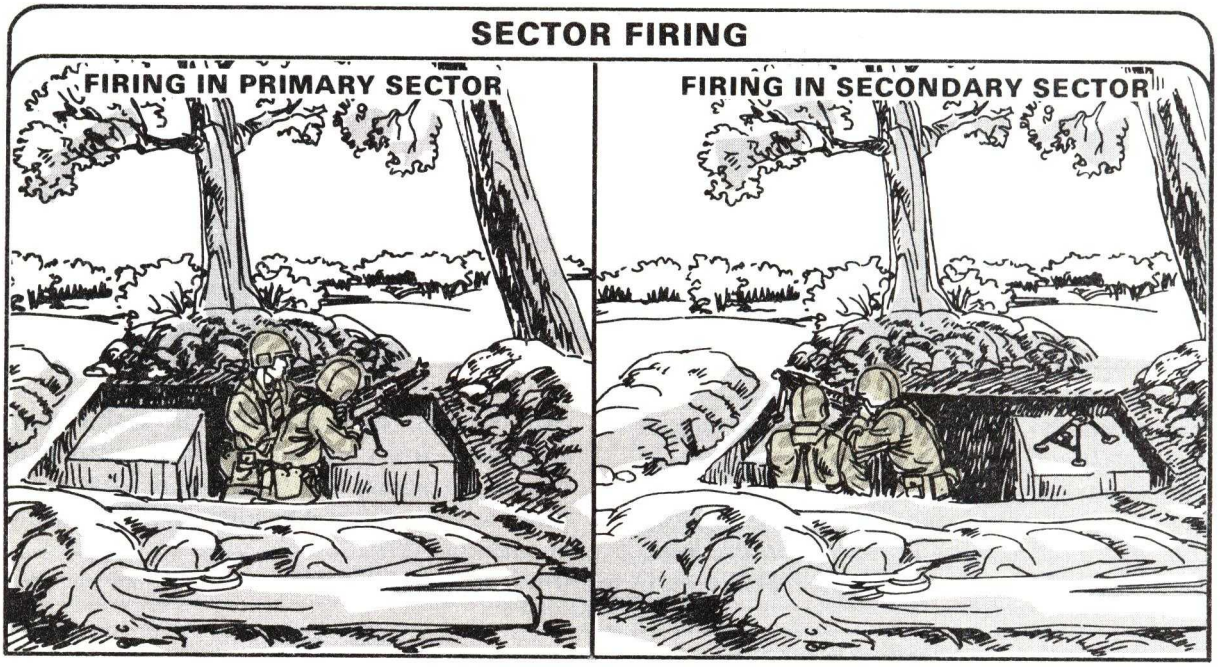
Revetments. Revetments are supports put against the sides of a fighting position to keep them from collapsing. Revetting is used in positions dug in loose or wet soil. Anything that will hold the walls (wire, boards, logs) can be used as long as it is staked and anchored. After anchor lines are attached, stakes are driven into the ground. That hides them so they will not be mistaken for aiming or sector stakes.

REVETMENT



MACHINE GUN POSITIONS

General. The primary sector of fire is usually to the oblique so that the gun can fire across the platoon's front. The tripod is used on the side with the primary sector of fire, and the bipod legs are used on the side with the secondary sector. When changing from primary to secondary sectors, the machine gun is moved but the tripod is left in place. The bipod is used in the secondary sector.



Dig a trench for the machine gun's bipod legs in the secondary sector.

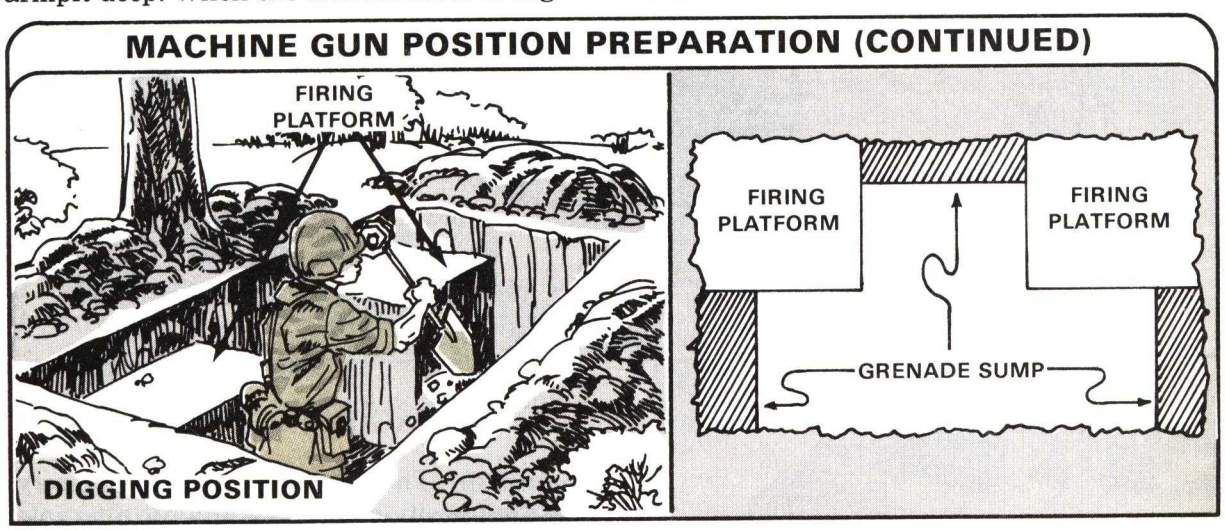
Occasionally a sector of fire, which allows firing directly to the front, is assigned. This may reduce the amount of frontal cover for the crew when firing to the oblique.

Preparing a Machine Gun Position. After the platoon leader has positioned a machine gun and has assigned sectors of fire and a PDF or FPL, mark the position of the tripod legs and the limits of the sector of fire. Then trace the outline of the hole and the frontal cover (if it must be improved).

The gun is lowered by digging down the firing platforms where the machine gun will be placed. The platforms must not be so low that the gun cannot be traversed across its sectors of fire. Lowering the gun reduces the profile of the gunner when he is shooting and reduces the height of the frontal cover needed. Dig the firing platforms first to lessen the gunner's exposure (in case firing is required before the position is completed).

After the firing platforms have been dug down, dig the hole — placing the dirt first where frontal cover is needed. The hole is dug deep enough to provide protection and still let the gunner shoot. This hole is usually about armpit deep. When the frontal cover is high and thick enough, the rest of the dirt is used to build the flank and rear cover.

Three trench-shaped grenade sumps are dug at various points so that grenades can be kicked into them.



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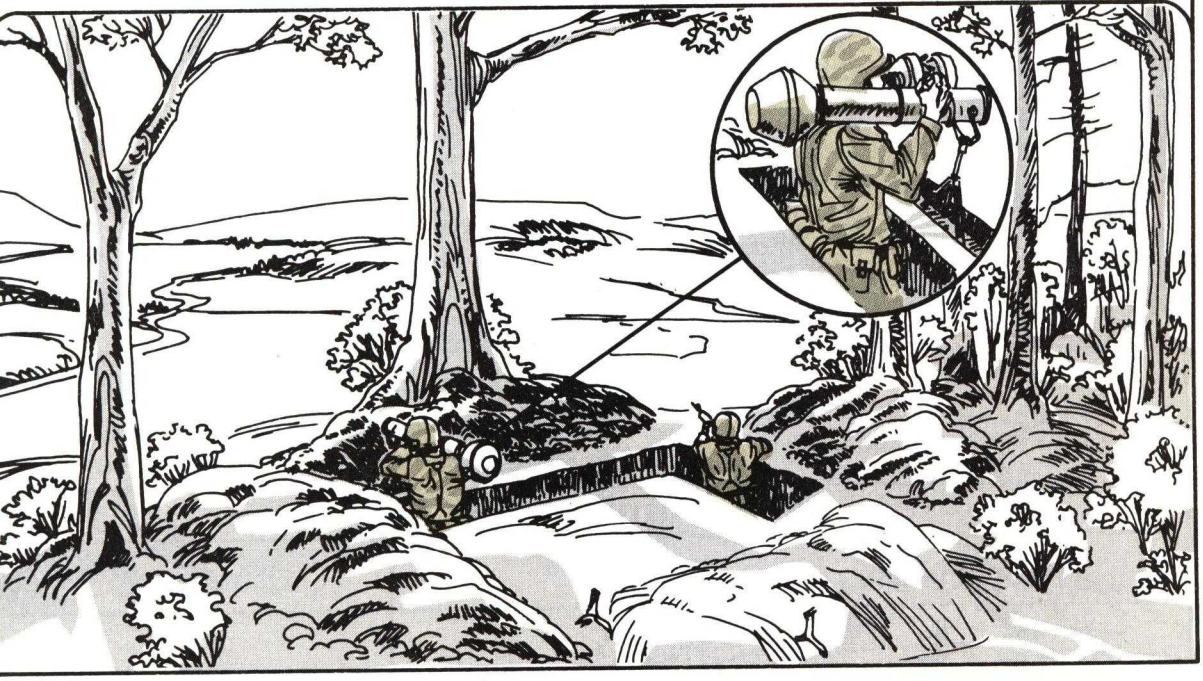
DRAGON POSITION



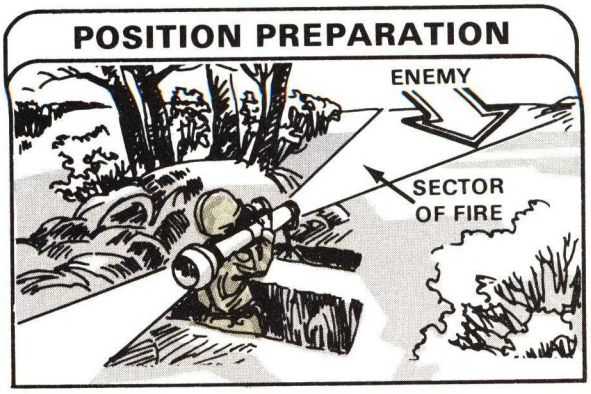
Preparing a Dragon Fighting Position. The position is only waist deep so that the gunner can move while firing. A trench for the bipod is dug 15 centimeters (6 inches) in front of the hole.

The position should be sited and oriented to cover its assigned sector of fire.

The position should be protected to the front by a parapet, or some natural or man-made cover.

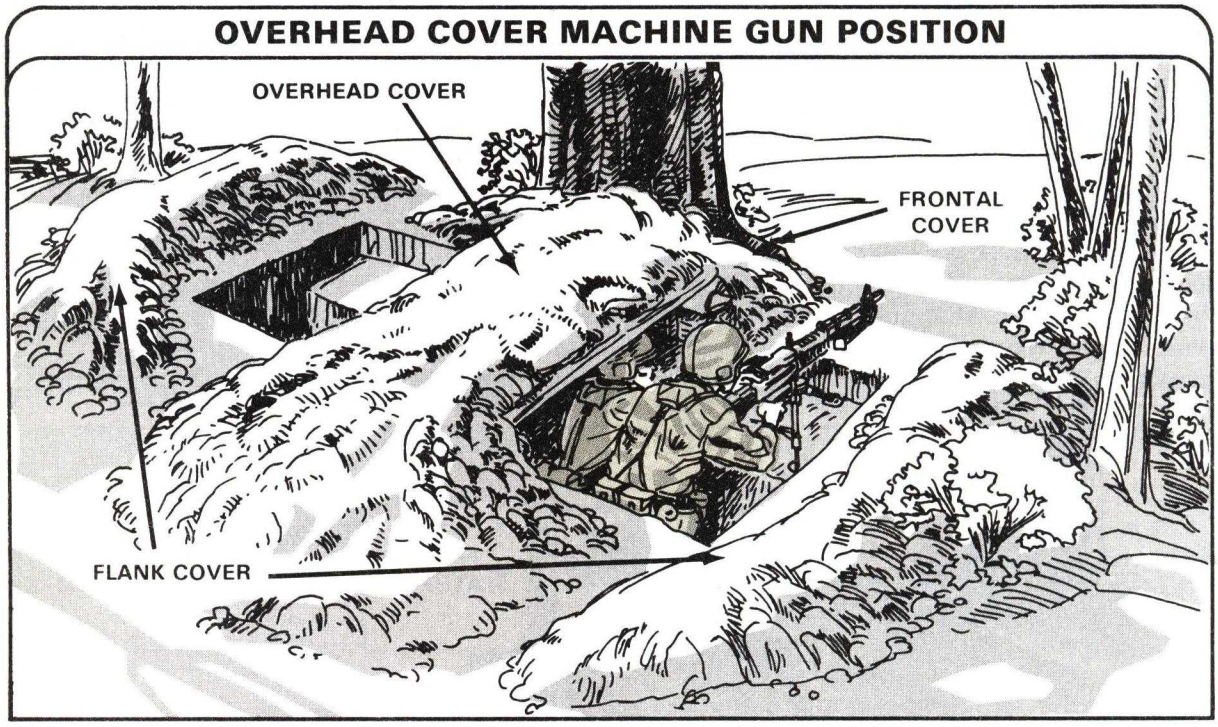
The ground in front of and behind the position should be free of rocks, sand, and debris to prevent a dust cloud (caused by firing) from obscuring the gunner's vision.

POSITION PREPARATION



In some positions, a machine gun may not have a secondary sector of fire; so, only half of the position is dug.

Overhead cover for a machine gun position is built the same as for a two-man position.



DRAGON POSITIONS

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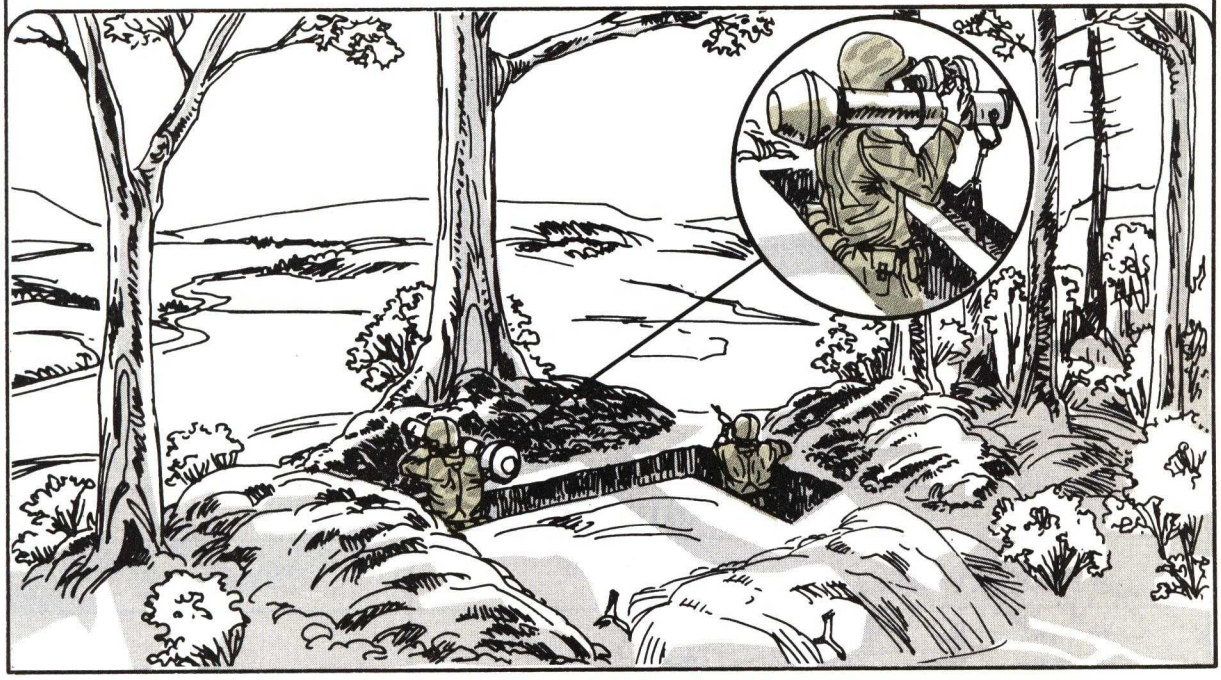

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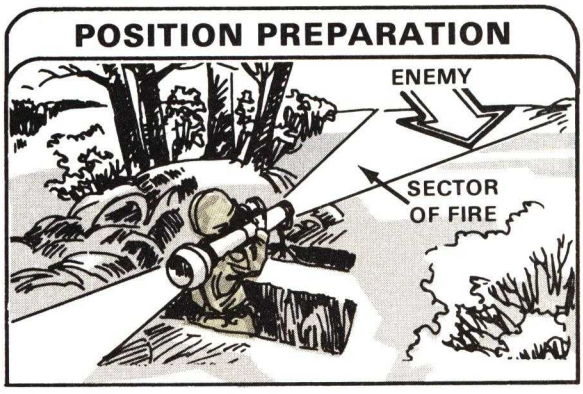

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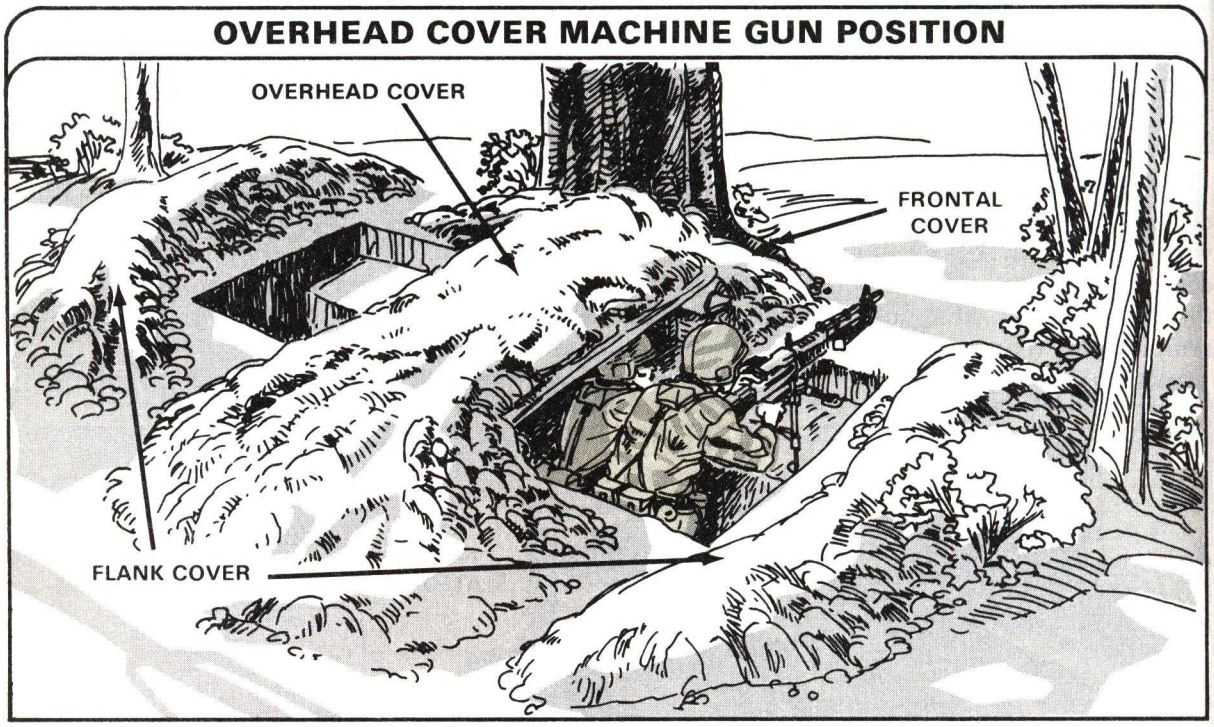

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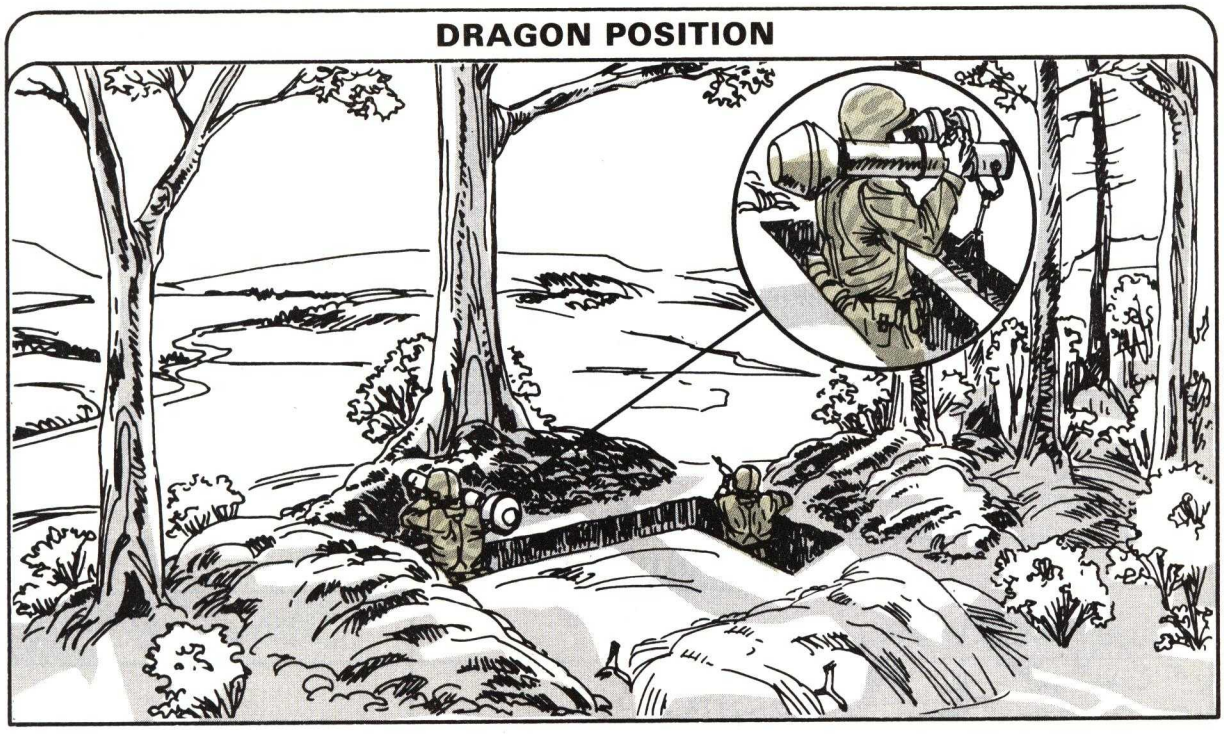

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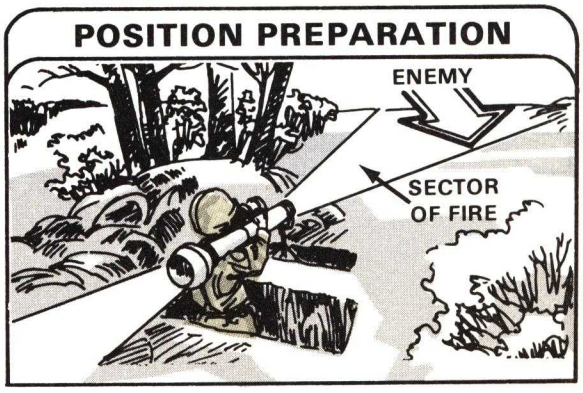
The position should be sited and oriented to cover its assigned sector of fire.

The position should be protected to the front by a parapet, or some natural or man-made cover.

The ground in front of and behind the position should be free of rocks, sand, and debris to prevent a dust cloud (caused by firing) from obscuring the gunner's vision.

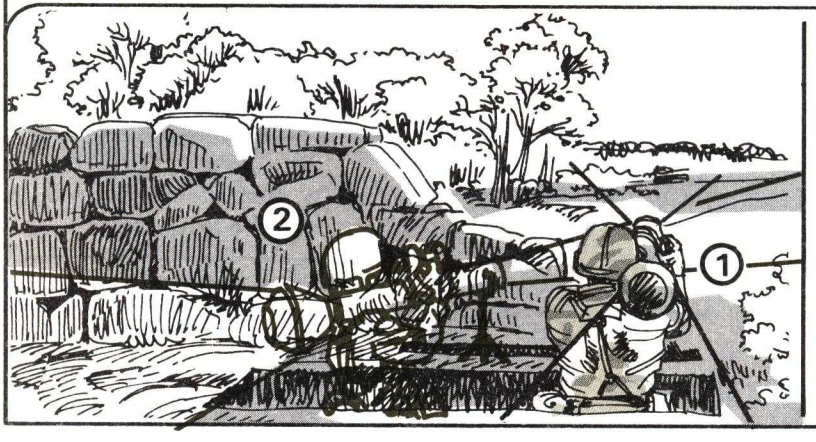


When the Dragon is to fire in only one direction, a one-man fighting position is best. The Dragon should be positioned to fire to the oblique so that its position can be protected from frontal fire while the target is being engaged from the flank.

OBLIQUE FIRE ONLY

If necessary, the Dragon can fire to the front as well as to the oblique from a one-man position.

FRONT AND OBLIQUE FIRE



① GUNNER FIRES TO THE FRONT FROM HERE.

② GUNNER FIRES TO THE OBLIQUE FROM HERE.

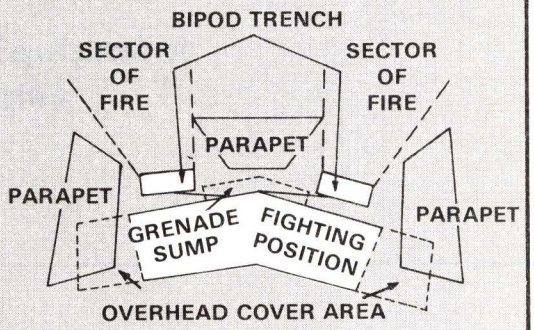
NOTE:

The one-man firing position is prepared as previously discussed.

The two-man fighting position is tri-
ular-shaped. It is best suited for use when
e than one sector of fire can be covered
n a single position. The design of the
ition gives the gunner frontal protection
allows targets to be engaged from the
que or flank.

Overhead cover is placed on the flanks of
one- or two-man Dragon position.

TWO-MAN DRAGON POSITION



APPENDIX I

Limited Visibility Equipment and Techniques

SECTION I. INTRODUCTION

GENERAL

Platoons that have trained long and ard and have mastered the tactical and echnical job skills required will fight ffectively even when visibility is limited. Darkness limits visibility on the battlefield, ut there are also other conditions that limit isibility. They are almost as common as darkness, but less predictable and more difficult to deal with. Smoke and suppressive fire, which can severely limit local visibility, are used in all armies. Dust and smoke caused by fire and movement of troops in combat often obscure parts of the battlefield. Smoke and dust are especially critical to the effective employment of long-range direct fire weapons. Rain, falling snow, fog, and natural dust also limit visibility. Most current night vision devices and battlefield illumination means are less effective under these conditions.

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COMMAND AND CONTROL

The leader's primary task is to coordinate and control the fire and movement of his unit so that he can mass combat power. This is a demanding task when visibility is good, and it becomes even more demanding when visibility is limited.

Poor visibility adds to command and control problems, and leaders must recognize and overcome every problem that makes it difficult to detect targets, distinguish between friendly and enemy units, fire weapons effectively, and navigate.

SECTION II. PLATOON AND SQUAD LIMITED VISIBILITY EQUIPMENT

GENERAL

Modern technology has produced devices that soldiers and leaders can use to reduce the effects of limited visibility. Several of these devices are organic to the platoon. This section defines the types and number of these devices issued to the platoon and explains how they are employed.

SURVEILLANCE, TARGET ACQUISITION, AND NIGHT OBSERVATION EQUIPMENT

Advanced STANO equipment is either active or passive. To be effective, active STANO equipment must project some form of energy. This energy can be detected by the enemy. Passive STANO equipment either detects existing energy emissions or uses available light as a detection means. Use of passive equipment is not detectable by the enemy.

There are two categories of passive STANO equipment — **image-intensification devices** and **thermal-imagery devices.**

Image-intensification devices, or starlight scopes, do not project detectable

energy. They amplify the existing or ambient light at night to project an image on the scope. Ambient light may be moonlight, starlight, or the glow from cities and towns. Light from flares, searchlights, and laser illumination improves the viewing capability but should not be viewed directly by the device. Image-intensification devices are adversely affected by fog, smoke, heavy rain, and falling snow. Image-intensification devices and binoculars aid where darkness is the only limiting factor.

Thermal-imagery devices penetrate fog, smoke, falling snow, camouflage, and light vegetation. The principle of this type of device is that all objects radiate a certain amount of heat, which travels outward as detectable energy. Because of differences in the amount of heat being radiated, the viewer detects each difference as a more intense or less intense image. Thermal-imagery devices can be used in daylight or darkness. Thermal-imagery devices aid through their ability to see through light vegetation, camouflage, darkness, smoke, fog, rain, falling snow, or a combination of these factors.

STANO devices greatly improve a unit's ability to carry out its mission under all conditions of visibility. Image-intensification and thermal-imagery devices aid in detecting enemy active STANO devices, such as infrared equipment.

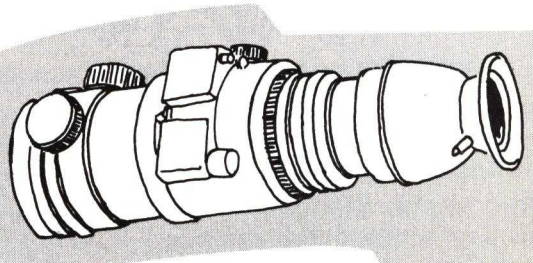
The platoon is issued the following STANO equipment: binoculars, AN/PVS-4 night vision sight, AN/PVS-5 night vision goggles, AN/TAS-5 night vision sight, AN/VVS-2 night vision driver's viewer, integrated sight unit, and the AN/TRS-2 platoon early warning system.

Binoculars. The platoon headquarters is issued two sets of 7X 50-mm binoculars. They are used by the platoon leader and the platoon sergeant to acquire long-range targets. At night, binoculars can be used to extend the range of the naked eye by taking advantage of the existing light. Binoculars are less effective through smoke, dust, heavy rain, falling snow, or fog. Additionally, each squad is issued one set of 7X 50-mm binoculars.

AN/PVS-4 Individual-Served Weapons Night Vision Sight. The AN/PVS-4 is a small, lightweight image-intensification device used on the M16A1 rifle. It can also be held in the hands. It weighs 3.7 pounds and has a range of 400 meters in starlight and 600 meters in moonlight. It is powered by a 2.7-volt battery with a battery life of 10 hours. It is a 3.8X telescopic device used to provide accurately aimed weapons fire at night and to detect, identify, and observe friendly and enemy operations. The AN/PVS-4 is issued one per squad.

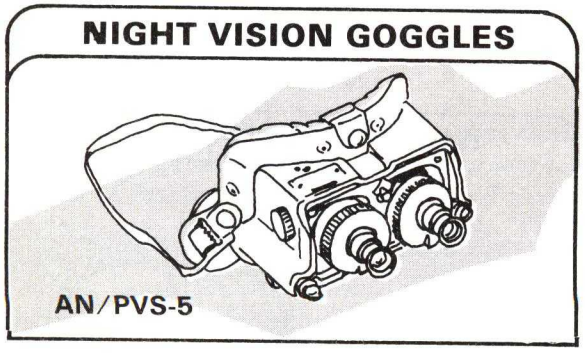
The squad leader or platoon leader can hold the AN/PVS-4 in the hand, as in an observation post, to provide a night observation capability. Who is to use the device is controlled by the squad leader or platoon leader.

NIGHT VISION SIGHT

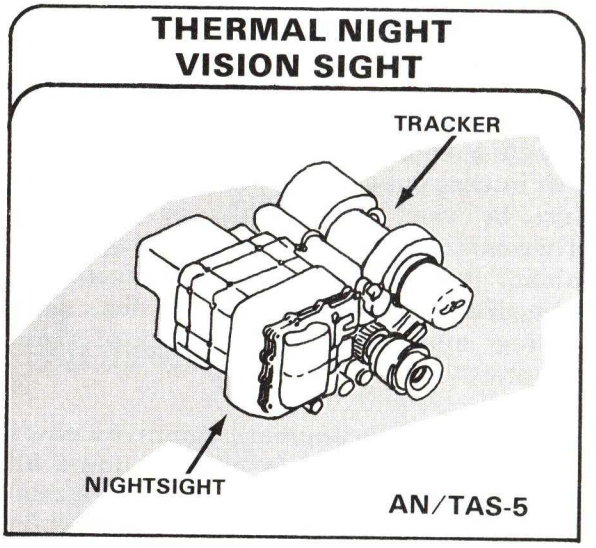


AN/PVS-4

AN/PVS-5 Night Vision Goggles. The AN/PVS-5 is a lightweight, battery-powered (2.7-volt), passive or active night vision device worn on the head. The battery life is 10 hours. It weighs 1.9 pounds and has a range of 150 meters in the passive mode. Three sets of goggles are issued per vehicle. By using the AN/PVS-5 while moving, the track commander has almost the same night vision capability as the driver. The AN/PVS-5 helps the Bradley commander control the movement of the vehicle as it travels at night on roads or cross country. The AN/PVS-5 has a built-in active infrared light source, which can be used to provide added illumination for close-up viewing within 2 meters. In this mode, the night vision sight can be used to read maps, overlays, or orders. The area where the active mode is used must be shielded from possible enemy detection. Inside a building or a vehicle, or under a poncho, there is not a direct line of sight from the infrared light source to the enemy. The AN/PVS-5 can be used for vehicle maintenance during darkness, and it can be worn by a ground guide to direct the BFV. It can also be used by the driver as a backup system to the AN/VVS-2 or worn by members of the rifle team during limited visibility operations.



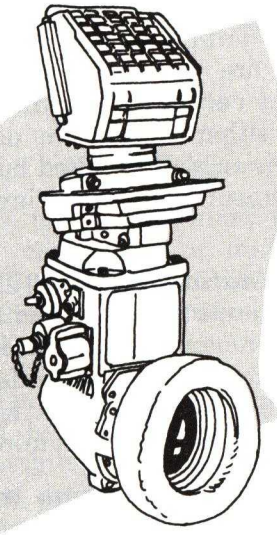
AN/TAS-5 Dragon Thermal Night Vision Sight. The AN/TAS-5 is a battery-powered, passive thermal-imagery system. It is issued one per Dragon daysight/tracker (thus three per platoon) for antiarmor specialist use at night. The AN/TAS-5 will detect, and display on a screen, thermal energy that is emitted by all materials and man-made objects. It weighs 20.6 pounds and has a range out to 1,200 meters. The AN/TAS-5 uses rechargeable batteries and employs small gas cylinders or bottles for cooling the detector electronics. These batteries and cooling bottles have a life of 2 hours. The AN/TAS-5 should only be used to acquire and engage targets. It should not be used as a surveillance device; other night vision devices are used for that role. When a target is detected, the gunner is alerted and uses the AN/TAS-5 to acquire and engage the target. A cooldown period of 10 to 15 seconds is required to activate the sight before it can be used effectively.



The tracker batteries and cooling bottles are recharged and refilled at the brigade trains. They are replaced by direct exchange on a one-for-one basis. Discharged batteries and empty gas bottles should be collected and exchanged whenever the situation permits. Collection and exchange procedures should be in the unit SOP. The platoon sergeant should collect the bottles and give them to the company supply personnel during normal resupply. The bottles should be exchanged during the day, when limited visibility engagements are less frequent.

AN/VVS-2 Night Vision Driver's Viewer. The AN/VVS-2 is an image-intensification device. It allows the vehicle driver to see well enough to move the BFV during darkness. It is mounted in the center periscope position of the driver's station. The center periscope is stowed in the AN/VVS-2's stowage space on the left side of the driver's compartment. Without placing his face against the eyepiece, the driver is able to use both eyes to view through one large diameter eyepiece of the AN/VVS-2. Night road marches can be conducted at speeds up to 50 kmph. At night, the driver is also able to sense rounds for the gunner with the AN/VVS-2, if the target is to the left front of the vehicle. The AN/VVS-2 can be rotated 30 degrees to the right or left. It has a range in excess of 150 meters. This gives the driver a field of view 115 meters wide at 150 meters. Rounds fired from the 25-mm gun and the 7.62-mm coaxial machine gun can be observed out to greater ranges. The AN/VVS-2 is powered by the vehicle electrical system or by use of a 2.7-volt battery.

DRIVER'S NIGHT VIEWER

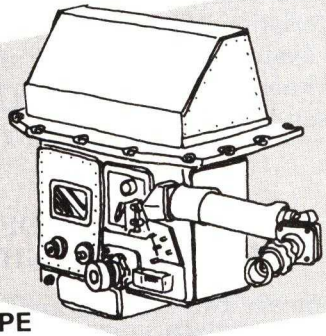


AN/VVS-2

Integrated Sight Unit. The ISU is a single-sight unit used for all the weapons on the turret. It has a daysight mode and a nightsight mode. The daysight uses normal optics that have both 4X and 12X magnification. The nightsight is a thermal-imagery device which has both 4X and 12X magnification. The 4X lens has a wide field of view. It is used for acquiring targets. Once a target is acquired, the sight is switched to the 12X magnification for target engagement. The smaller field of view presented by the 12X sight helps furnish greater accuracy when engaging targets. The ISU displays the same image to both the gunner and Bradley commander; thus, both can acquire and engage targets. Rain and falling snow decrease the ISU's effective range.

When the ISU is used during the silent-watch mode of operation (see Appendix N), the turret must be traversed and weapons elevated by hand to conserve power.

INTEGRATED SIGHT UNIT



ISU
PERISCOPE

NOTE:

The thermal-imagery sight requires a 10-minute cooldown period before targets can be detected. Each unit should have an SOP covering when the thermal sights are to be turned on before dark or during smoke conditions.

AN/TRS-2 Platoon Early Warning System. The AN/TRS-2 platoon early warning system (PEWS) is a remote sensor system (REMS). Each rifle company has three PEWS. The system has 10 ground-implanted sensors. They transmit a signal (by radio or wire) to a receiving set that indicates movement in the area and which sensor is reporting. PEWS also differentiate between foot and vehicular movement. This device is ideal for monitoring avenues of approach masked by terrain or poor visibility. They should be employed along avenues of approach and in dead spaces or gaps forward of or between units. Each sensor can detect targets up to 15 meters from the sensor location. Its signal can be transmitted up to 1,500 meters.

SECTION III. BATTLEFIELD ILLUMINATION

GENERAL

Artificial battlefield lighting is the easiest way to penetrate darkness. The trick is to illuminate or silhouette the enemy without illuminating friendly forces. There is always a chance that artificial lighting may have an adverse effect on friendly troops. The characteristics of available artificial illumination systems, and how they are influenced by darkness, weather, and terrain, are addressed in this section.

CATEGORIES OF ARTIFICIAL LIGHT

There are two types of artificial light — **invisible** and **visible.**

Invisible light is emitted by an infrared source and is impossible to see with the unaided eye. It offers greater security than visible light because a night observation device is needed to detect it. But it is easily detected by active and passive devices.

Visible light, such as that from flares and searchlights, requires no special equipment outside the light source itself. It is the simplest type of illumination. Visible-light sources are used frequently to continue operations into the night. The disadvantage of using visible light is that it compromises friendly positions.

The platoon uses the following sources of artificial visible light: tripflares, M203 illumination rounds, indirect fire illumination, and tank searchlights.

Tripflares. Tripflares are mainly for defense and are excellent early warning devices. They can be set to ignite by rigging them with either a pull pin or a trigger release. Their size and limited burning time make them unsuitable for continuous illumination.

M203 Illumination. The M203 illumination round can provide fast, close-in illumination when the dismount team is deployed. The round burns for about 40 seconds. It is used the same way and is subject to the same conditions as indirect fire illumination.

Indirect Fire Illumination. Indirect fire illumination from artillery and mortar fire is the most commonly used form of battlefield illumination. Wind direction must be con-

sidered when requesting illumination of this type. The height of burst of the shell is determined by the round's burning time. Illumination rounds should be fired so that they burn out just before ground contact. Drifting flares may illuminate friendly units, so the forward observer must adjust the detonation point of the round to keep it from illuminating friendly units. If ground fire is a hazard, the height of burst should be raised to keep the flare from landing while burning. Strong winds may move the burning flares off target; thus, to achieve continuous illumination, increase the rate of fire. Normally, indirect illumination will not provide enough light to allow use of the ISU daysight. The illumination will not affect the use of the nightsight, but if it comes into the nightsight's field of view it will appear as a streak on the screen.

Illumination from artillery or mortar flares is dimmed by fog, dust, smoke, and falling snow. Under these conditions of limited visibility, low illumination rounds may be used as a navigation aid, with the flares' light visible enough to act as a beacon, even though it may not furnish usable illumination.

Searchlight. Searchlights are on many types of tanks and in target acquisition batteries of corps artillery. Tank searchlights furnish two types of illumination — white light and infrared light. Depending on the terrain, enemy situation, and cloud cover, searchlights may be used to provide direct illumination, or reflected illumination off low clouds. They can mark targets, objectives, or boundaries. They can also be used to increase deception by illuminating an area or point outside the intended area of action. When using searchlights, the system employing the light is easily detected and extremely vulnerable. It should be used when no other system is available.

SECTION IV. CONTROL DURING LIMITED VISIBILITY

GENERAL

Various techniques must be used by leaders to control units during limited visibility. These include measures to identify friendly forces, to control movement and fire, and to navigate.

During movement, visual contact can be maintained by reducing the intervals between dismounted soldiers or vehicles. Still, night vision devices (AN/PVS-5 and AN/VVS-2) allow units to retain dispersion while maintaining visual contact. When vehicles are moving in any area that has friendly dismounted personnel, such as an assembly area or urban terrain, dismounted guides must be used. Leaders should move forward where they can control the direction and speed of movement.

NAVIGATION

Whenever possible, guides should be used while moving (mounted or dismounted) over unfamiliar terrain. Compasses, visible landmarks, and night vision devices can be

used as navigational aids. Ground surveillance radar and night vision devices can also be used to guide dismounted patrols as they depart and when they return to friendly positions. Artillery spotting rounds may help determine location and direction.

The BFV turret-stabilization device can be used to orient mounted movement during limited visibility. The Bradley commander should select a distant reference point before entering a limited visibility condition (smoke, fog, haze). The gunner then turns on the stabilization, traverses the turret, and lines up on the reference point. The turret will remain oriented in the general direction of the reference point. The Bradley commander, assisted by the gunner, tells the driver which way to turn the vehicle to keep it oriented in the correct direction. The Bradley commander can observe from his hatch for obstacles and movement control. This technique will keep the vehicle moving in the right direction. The gunner must keep constant pressure on the gunner's control palm grips, without moving the turret, while the stabilization system is engaged.

FIRES

Besides the nightsight and other night observation devices, there are several techniques and aids that can be used to control the BFV's and dismounted weapons' fires. When the unit is in a stationary position, range cards should be used. Range cards help orient weapons on likely targets and reference points. (See Appendix C.) The platoon should make wide use of wire in the defense to establish more reliable and secure communication between the teams, OPs, and platoon headquarters. Tracers can be used to denote targets and to direct fire on targets. Pyrotechnic signals, such as hand-fired flares, can be used to call for the lifting and shifting of fire.

APPENDIX J

Smoke

SECTION I. ONBOARD SMOKE PRODUCERS

GENERAL

Smoke obscures vision and degrades most sighting devices. Both friendly and enemy forces use smoke to reduce their opponent's ability to see, move, and fight. Both forces may use smoke to screen their own movement, and they may place smoke to deceive. Thermal-imagery sights and viewers provide the means to see and shoot through most smoke.

SMOKE DEVICES

The BFV has two types of onboard smoke devices, and a thermal-imagery sight to see through smoke. The smoke devices are

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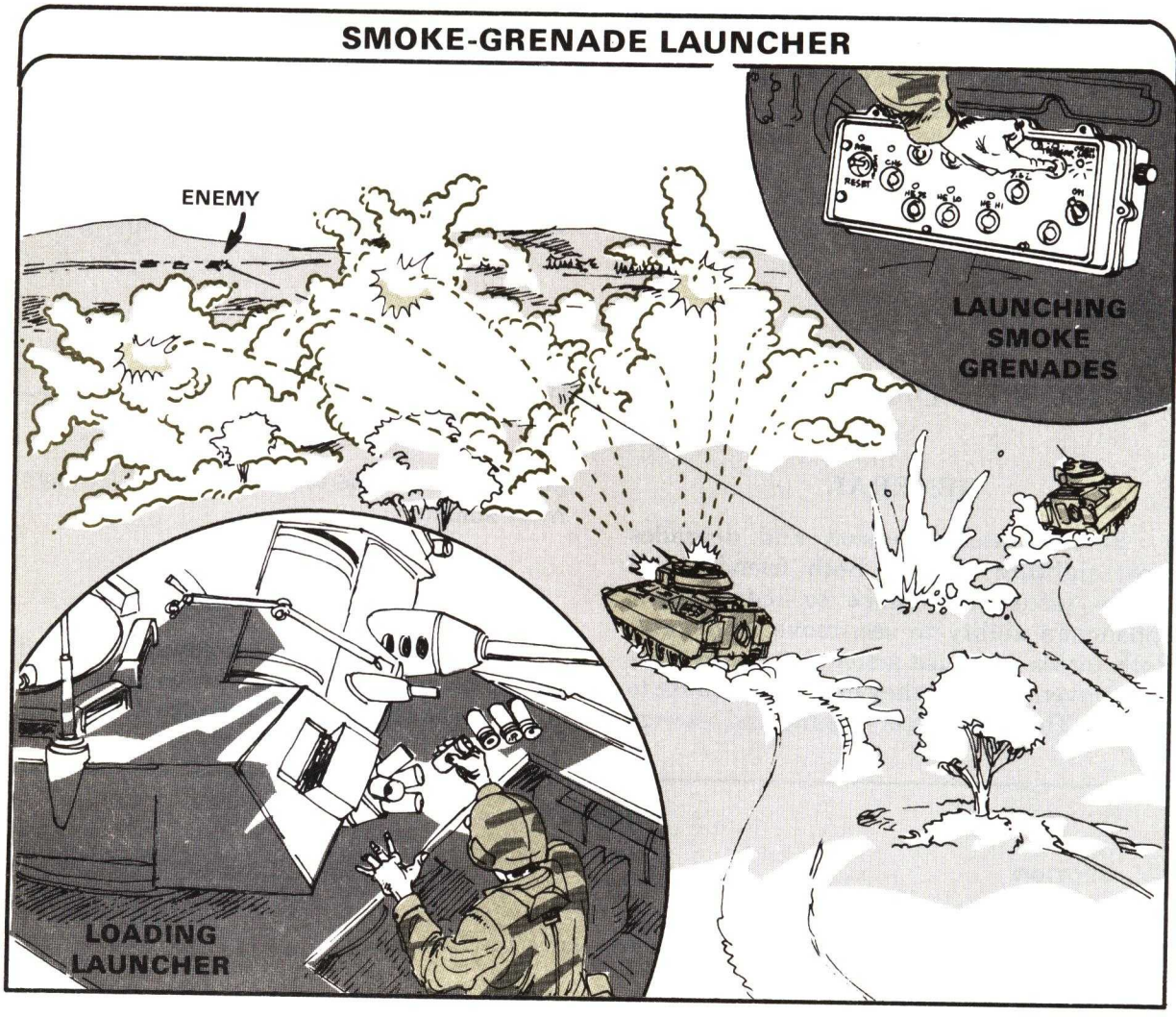
the M257 smoke-grenade launcher and the smoke-screen generator.

Smoke-Grenade Launcher. The M257 smoke-grenade launcher is used to spread a smoke screen quickly. There are two four-tubed launchers, one on each side of the turret. Eight smoke grenades are simultaneously launched electrically by the Bradley commander or gunner from the turret.

Four more smoke grenades are stowed in the ammunition box above each grenade launcher. The total number of rounds carried on the vehicle is 16. This system must b reloaded by hand from outside the vehicle.

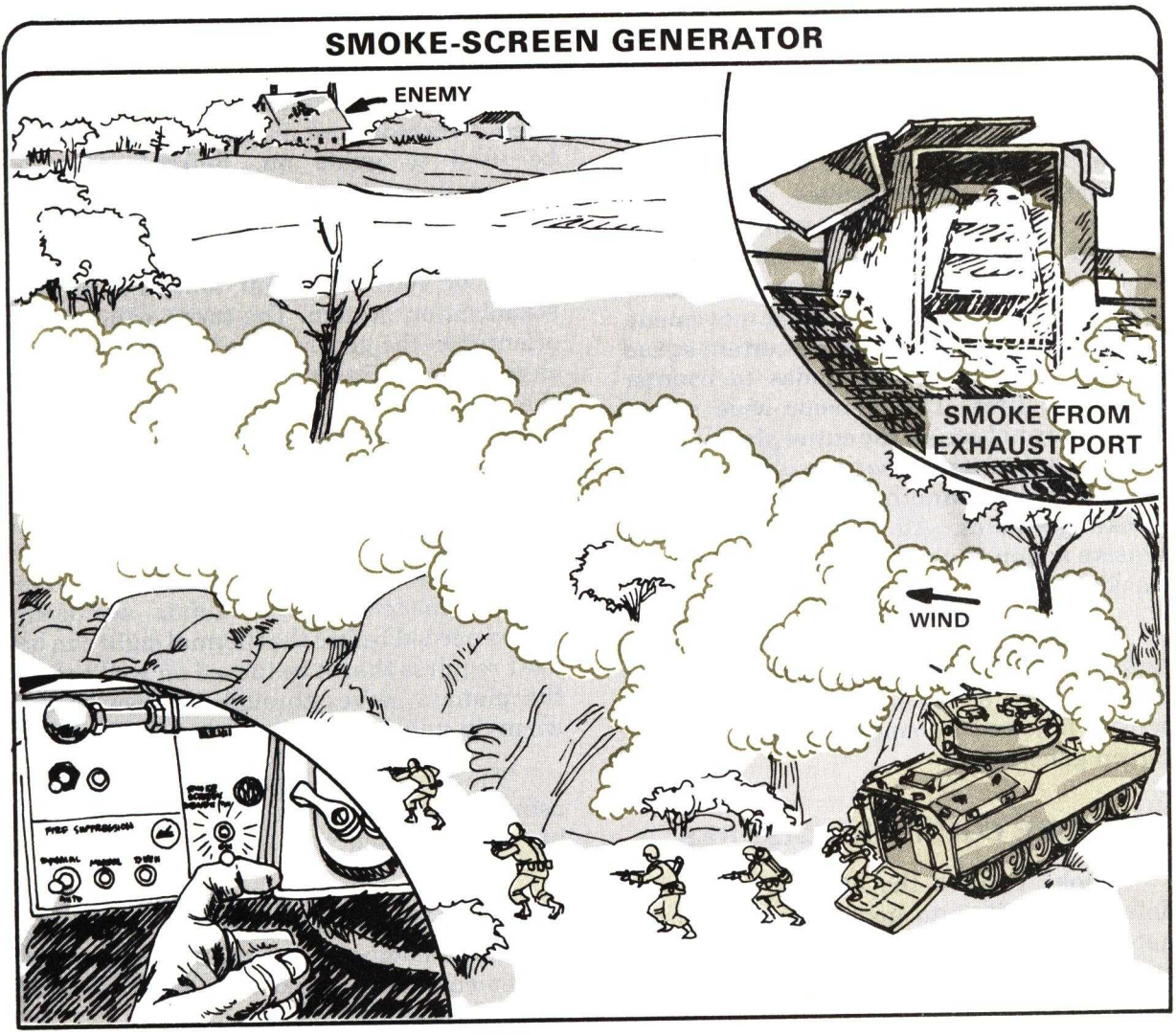
The grenades are filled with red phos phorus. Upon activation, a dense cloud o white smoke is created from ground level up to a minimum height of 7 meters, by 70 meters wide, and between 20 and 50 meters from the vehicle. All this action takes 2 to 6 seconds. The cloud lasts from 1 to 3 minutes depending on wind speed and other weather conditions.

Loading, stowing, reloading, and firing instructions for the grenade launcher are in TM 9-2350-252-10-2.



Smoke-Screen Generator. The BFV smoke-screen generator uses the engine exhaust system to furnish a continuous stream of smoke. Smoke is created by injecting raw diesel fuel into the engine's exhaust manifold. This emits a large amount of smoke from the right front side of the vehicle for as long as wanted.

Smoke is a major factor on the battlefield. Measures should be identified and techniques practiced that allow the platoons and squads to use smoke, both enemy and friendly, to their advantage.



SECTION II. TACTICAL CONSIDERATIONS IN A SMOKE ENVIRONMENT

GENERAL

A platoon can use smoke to screen movement between positions; occupation of, withdrawal from, or reoccupation of positions; or in a counterattack. This smoke is supplied by the vehicle using the smoke-screen generator. The smoke can also cover displacement between delay positions. It can deceive the enemy as to the location and number of vehicles employed on each position, and it can slow the enemy enough to let the platoon occupy new positions.

Because there are only 16 smoke grenades per vehicle, the use of the grenade launcher must be controlled. The limited number of smoke grenades makes it necessary for the platoon to take advantage of all other smoke sources and conserve smoke grenades for self-defense. During movement, a platoon leader might direct a certain squad to launch its smoke grenades to counter antiarmor fires. The 70-meter-wide smoke screen may not screen the entire platoon from the enemy gunners. If not, the platoon leader could then direct another squad to launch its smoke grenades. All vehicles must take evasive action to get full advantage from the smoke screen.

If a smoke screen is needed to cover the crossing of an open area, the smoke-grenade launcher can be used to set up the smoke screen, followed by smoke from the smoke-screen generator.

SMOKE COUNTERMEASURES

Smoke reduces the attacker's and the defender's ability to acquire targets, navigate, and control their forces. The use of smoke must be carefully planned to insure that the intended advantage is gained.

Detailed plans must be made, and everyone must know what actions are to be taken in a smoke environment.

A detailed reconnaissance of the area must be carried out using all available resources (radars, aerial photographs, maps, etc.).

In the defense, and as time permits, routes to subsequent positions should be reconnoitered in depth.

During movement, terrain features, woodlines, riverbeds, and man-made features can be used to guide on. Before smoke is employed, or if the BFVs vision of the target or reference point is obscured, the gunner should lay the 25-mm gun on the target or reference point and turn on the stabilization system. The turret will remain oriented in the general direction of the target or reference point. It will not point exactly at the target or reference point. The gunner must maintain constant pressure on the gunner's control palm grips without turning the turret while the stabilization is engaged.

Use of the thermal-imagery sight to see through smoke must be planned by the platoon leader. The 10-minute cooldown period needed before the thermal sight can be used requires that it be turned on well before the platoon moves through its own or the enemy's smoke.

The smoke is controlled by the driver using the smoke-screen generator switch on his control panel.

A platoon of BFVs can produce enough smoke with these smoke-screen generators to screen the company, depending on speed of movement, wind speed and direction, and other weather conditions.

Smoke used to conceal movement is more effective when precautions and evasive actions are also used. Whenever possible, smoke should be produced from a covered or concealed position. A woodline or defilade position may be used to conceal the vehicles generating the smoke screen to cover an open area which must be crossed. Evasive action — that is, a zigzag pattern — should be used when creating a smoke screen while moving to take advantage of the concealment resulting from the smoke screen.

APPENDIX K

Evacuation of Casualties

SECTION I. INTRODUCTION

GENERAL

By engaging enemy vehicles with both its 25-mm gun and its TOW, the BFV will attract a lot of enemy return fire. Platoon members may become casualties and will require evacuation.

To evacuate casualties quickly, every man in the platoon must know the evacuation procedures for different vehicle positions, such as vehicle upright, turned on either side, or overturned. This appendix covers the procedures to follow for different situations.

STEPS IN CASUALTY EVACUATION

Observe for Vehicle Fire. When a BFV is found that has been hit by enemy fire or damaged by a mine, it should be inspected to determine the extent of damage and to find out if there is a danger of fire. The internal or external fire suppression handle should be pulled if the threat of fire exists. The handles on the inside are in the driver's station and on the right side of the troop compartment. The one in the driver's station is used to suppress a fire in the engine compartment. The one in the troop compartment is used to suppress a fire in the troop compartment. Open hatches and working exit points should be identified to plan the swift evacuation of casualties.

NOTE:

There are four fixed fire extinguisher handles on the vehicle, two on the outside and two on the inside. The handles on the outside are on the left front and right rear. The left front handle, near the driver's hatch, is used to suppress a fire in the engine compartment. The right rear handle, near the fuel filler cap, is used to suppress a fire in the troop compartment.

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Move Vehicle to Safe Location. If the vehicle can move under its own power, it should be moved to a safe place before evacuating casualties. If the driver is wounded and cannot operate the vehicle, he should be removed through the troop compartment, replaced, and the vehicle driven to a safe location.

Check and Treat Casualty. Too rapid an evacuation of a casualty may cause further injury. Before a casualty is evacuated, he should be checked thoroughly to discover the full extent of his injuries, and first aid should be administered to those wounds requiring attention. There may be some instances, though, when the casualty should be evacuated immediately (such as a burning vehicle).

Evacuate Casualty. After giving the necessary first aid, the casualty's CVC helmet or headset should be disconnected and his seat belt released. If the vehicle is on its side or overturned, he must be supported before the seat belt is released, to prevent additional injuries. He is then evacuated.

SAFETY PRECAUTIONS

The Bradley commander, gunner, and driver should stow their load carrying equipment (LCE) under their seats. This action lets them move about the vehicle and get out of it without the LCE catching on objects in the vehicle. This also helps others to evacuate them if they become casualties.

Before evacuation, the LCE should be removed from casualties in the troop compartment so that the equipment does not catch on anything during evacuation.

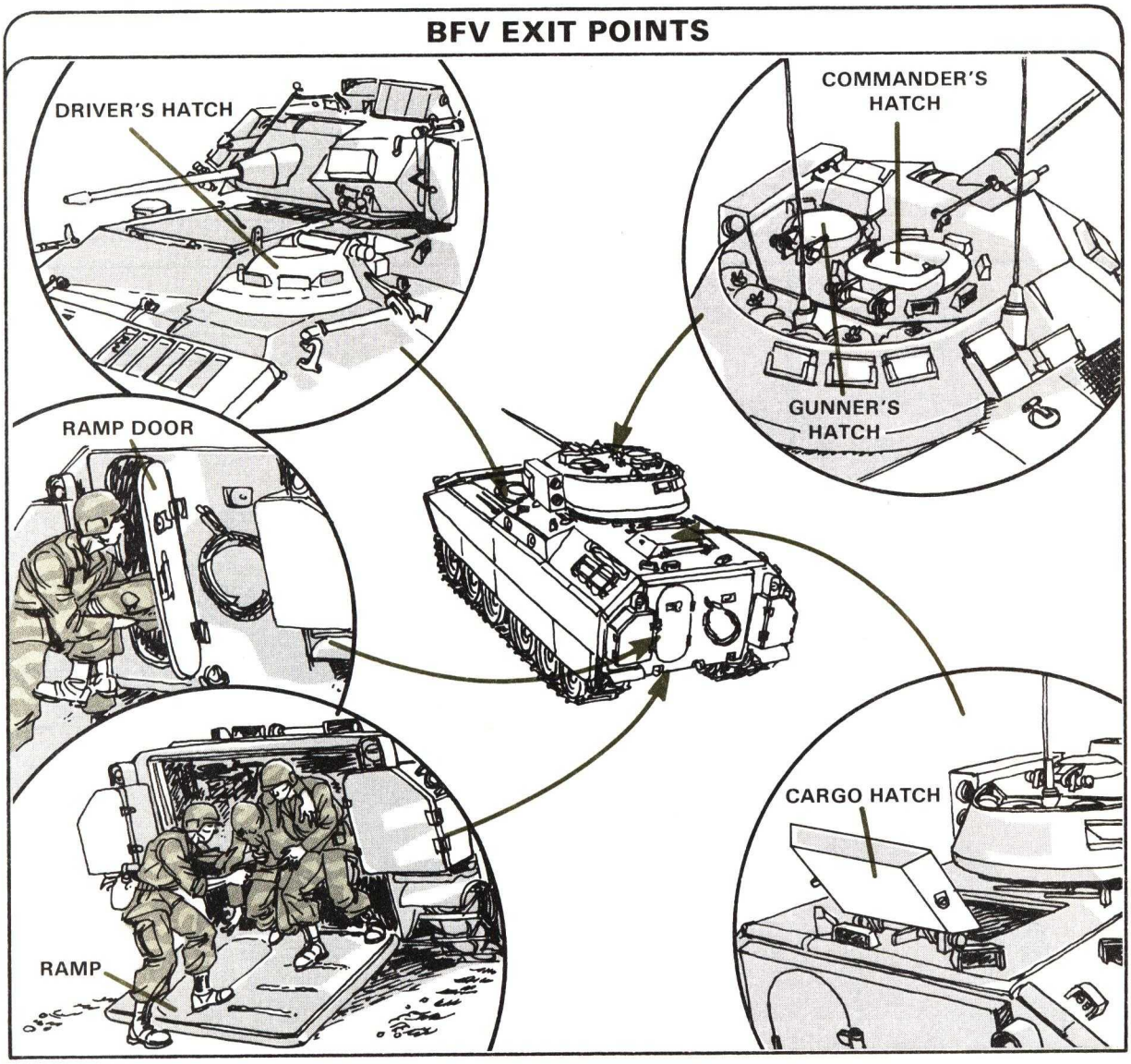
EXITS

To evacuate a casualty, individual soldiers must know what exits are available. The BFV has six exits: The Bradley commander's hatch, gunner's hatch, cargo

hatch, ramp door, and ramp. Some may be used to evacuate any of the occupants, and others are used to evacuate specific occupants.

When possible, the Bradley commander's hatch, gunner's hatch, and driver's hatch will be the evacuation exit for the commander, gunner, and driver. If these exits are blocked, or if the tactical situation prevents their use, casualties from these three positions will be evacuated through the troop compartment and out the ramp door or the ramp.

The ramp will be the main exit used to evacuate casualties from the troop compartment. The ramp door will be used if the ramp is inoperable and cannot be opened. Because of the difficulty in evacuating casualties through the cargo hatch, it should be used only as a last resort.



SECTION II. PROCEDURES FOR CASUALTY EVACUATION

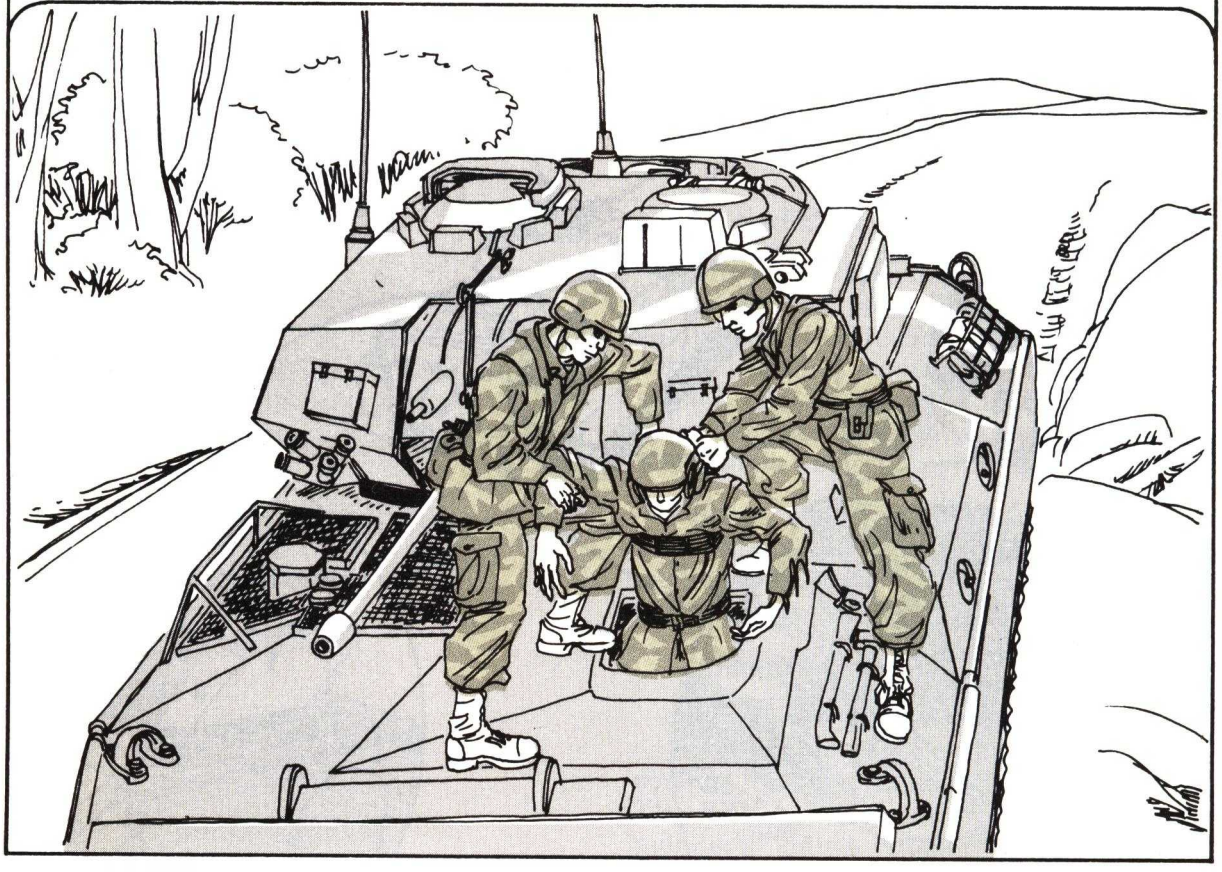
GENERAL

The following procedures must be rehearsed so that the squad can effectively evacuate casualties.

DRIVER

When the driver's hatch is working and the situation allows, the driver is evacuated through the driver's hatch. The soldiers doing the evacuating will evacuate the driver after first unlocking and opening the hatch fully. One man will then lean head first into the hatch (assisted as necessary) to make sure that the engine is off, the range selector is in gear, and the hand brake is set. He will then raise the seat to the full up position, unbuckle the driver's seat belt, and disconnect his CVC helmet. Depending on the driver's injuries, he will be lifted out, from the top, by two soldiers, helped by another from inside the vehicle. A pistol belt, placed around the driver's chest and under his arms, can be used to pull him out. Once he is on the top of the vehicle, he will be passed down to personnel on the ground.

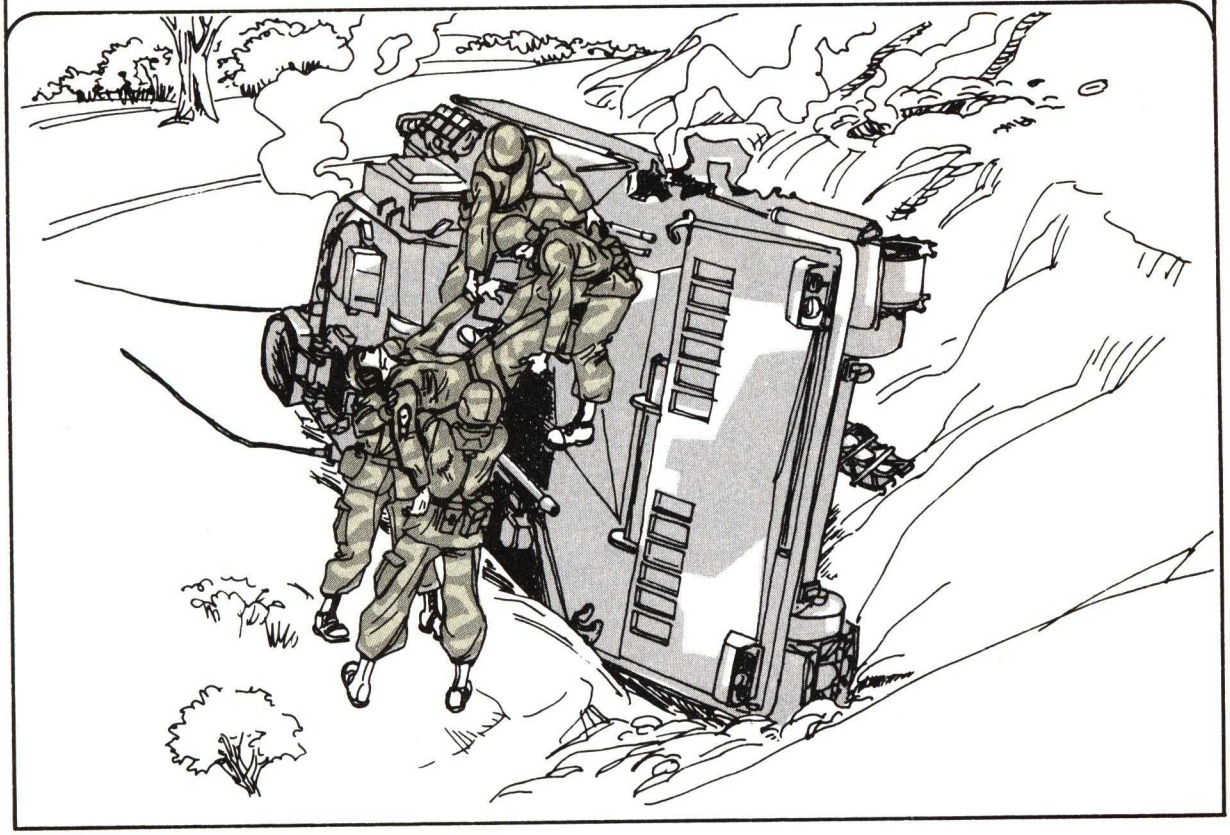
EVACUATING THE DRIVER



The driver may have to be evacuated through the troop compartment and out the ramp, because his hatch is inoperable or the vehicle is receiving enemy fire, or due to some other tactical condition. The No. 4 and No. 5 men will unbuckle their seat belts and stow their seats. The No. 4 man will reach over the driver and check to make sure that the engine is shut off, the range selector is in gear, and the hand brake is set. The driver's seat is lowered and the back laid down slowly. The driver's seat belt is unbuckled and his CVC helmet disconnected. The driver is grasped under the arms or in another way, depending on his injuries. He then is pulled over the seats to the troop compartment. Care must be taken not to further injure the driver because of close quarters or protruding objects. He will be evacuated out the ramp.

If the vehicle is on its side, the driver must be supported while his seat belt is unbuckled, to prevent further injury. If the vehicle is on its left side, it takes two people to pull out the injured driver because the hatch opening will be next to the ground. If the vehicle is on its right side, four people will be needed to pull out the driver and to pass him down from the vehicle.

DRIVER EVACUATION RIGHT SIDE



BRADLEY COMMANDER AND GUNNER

The way the Bradley commander and gunner will be evacuated will vary depending on whether one or both are casualties, and whether or not the turret is operable.

If the turret is operable and only one person is injured, the uninjured person will rotate the turret to 6400 mils to align the turret opening with the turret shield door. The turret drive power should then be turned off to prevent the turret from moving during evacuation. The uninjured person will unbuckle and disconnect both CVC helmets. The injured person is rotated to the center of the turret and pulled from his seat. He is guided through the shield opening, moved into the troop compartment, and taken out by the ramp.

If the turret cannot be rotated to align the turret shield door with the turret opening, the evacuation must be through the turret hatches.

The uninjured person opens both turret hatches and raises the seat of the injured person to the full up position. He then unbuckles the injured person's seat belt and disconnects his CVC helmet. Two persons outside the turret lean in and pull the injured man out through the hatch. A pistol belt may be used as outlined earlier. The man inside the turret assists in lifting and guiding the injured person through the hatch. Once outside the turret, the two men lower the injured man down to others on the ground.

If the vehicle is on its side, the injured person's CVC helmet is disconnected and his seat belt released. He must be supported before the seat belt is released, to prevent further injury. He then is pulled out of the hatch and lowered to the ground.

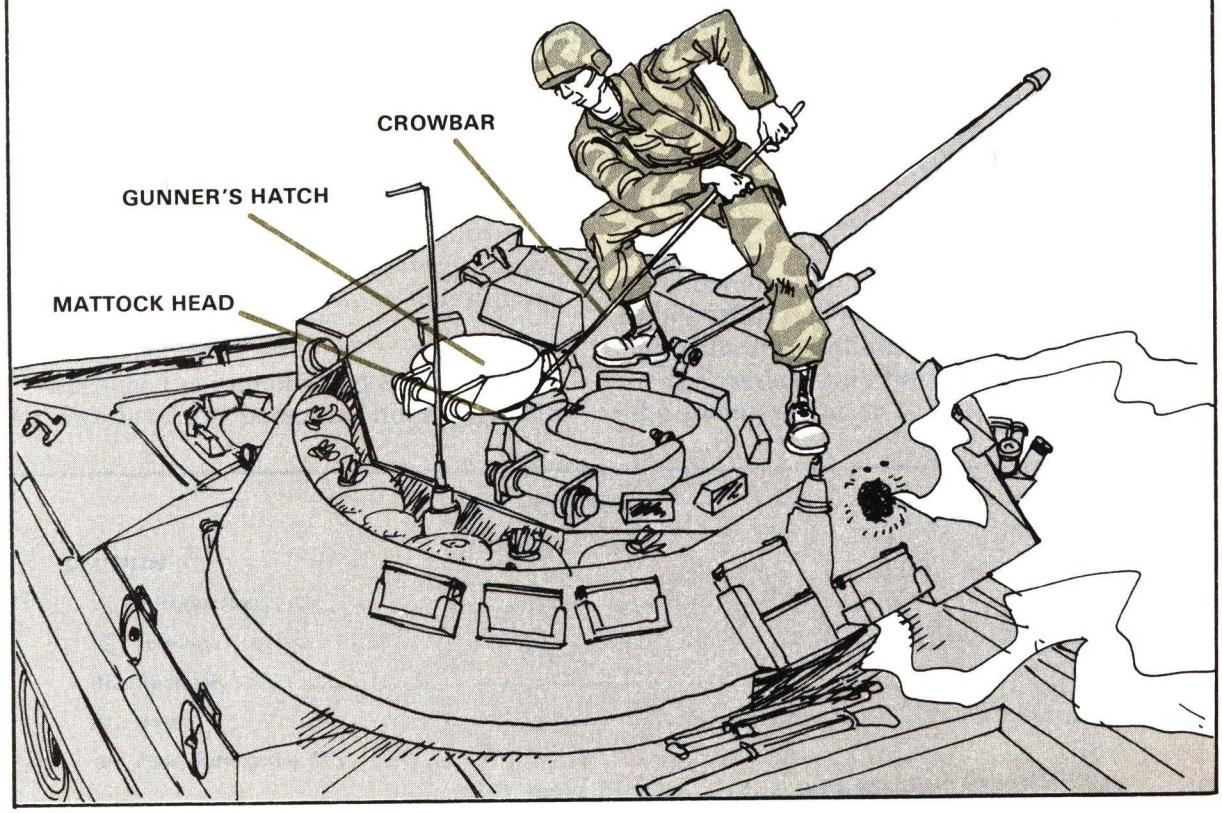
If both the Bradley commander and gunner are injured and the turret opening is not aligned with the turret shield door, the

rescuers must either align the turret shield door or pry open the gunner's hatch to evacuate the casualties. With the turret shield door partially open, the 25-mm gun cleaning rod can be passed through any opening in the turret. It can be used to hit the cover latch of the gunner's hatch to open the hatch cover.

The 25-mm gun cleaning rod also can be used to tap the Bradley commander's control handle enough to rotate the turret a little at a time to align the turret opening with the turret shield door. This process is time-consuming and dangerous.

If the hatch cover will not function, the gunner's hatch will have to be opened from the top of the vehicle. A crowbar and mattock head are used to pry open the gunner's hatch, using the mattock head as a pivot for the crowbar. The hatch can be pried open, prying between the gunner's right periscope and the commander's left periscope.

PRYING OPEN THE GUNNER HATCH



When the gunner's hatch is open, the rescuers reach through and open the Bradley commander's hatch. The Bradley commander's control handle should be used to align the turret opening with the turret shield door to evacuate casualties through the troop compartment. If the turret will not rotate, the casualties must be evacuated through the turret hatches.

If the vehicle is overturned with the turret opening aligned with the turret shield door, the injured persons will be evacuated using the same procedures as stated above. If the turret opening is not aligned with the turret shield door, the vehicle must be pulled over on its side to evacuate the casualties. The overturned vehicle should not be pulled all the way upright. Any casualties inside the overturned vehicle could be injured further unless the vehicle is slowly lowered to the ground. When the vehicle is pulled over on its side, the Bradley commander and gunner should be evacuated out the turret hatches using the procedure listed above.

PERSONNEL IN TROOP COMPARTMENT

Injured persons in the troop compartment will be evacuated through the ramp, the ramp door, or the cargo hatch. The casualty's seat belt must be unbuckled and his CVC helmet disconnected or his headset removed. He then will be evacuated through the most convenient exit.

The first steps in evacuating casualties are checking for injury and administering first aid before evacuating the casualties from the vehicle. Casualties should be moved quickly, but safely, to the proper medical facility for further treatment. Prompt, sure action on the part of fellow soldiers to evacuate casualties to the rear, as stated in the unit SOP, will help increase their chances of survival and speed their return to their units.

APPENDIX L

Recovery Techniques

SECTION I. INTRODUCTION

GENERAL

If a BFV is disabled, gets stuck, or will not start, the squad must get it moving as quickly as possible. A stationary vehicle is vulnerable to direct, indirect, and air delivered munitions. This appendix covers towing a disabled BFV, starting it by towing or using a slave cable, retrieving it if it is stuck in mud or immobilized on an obstacle, safety considerations for recovery operations, and how to disable the vehicle if it has to be abandoned.

Because the immobilized BFV is such a worthwhile target, personnel not involved in the recovery should be in position to provide security. If the turret weapons still function, the gunner should stay at his station and be ready to engage targets as required.

REDISTRIBUTION OF MEN AND EQUIPMENT

If the vehicle cannot be recovered quickly, the platoon leader may decide to redistribute men and equipment among the other vehicles. The driver and gunner may be left with the disabled vehicle to wait for help, or the vehicle may have to be abandoned if the enemy situation warrants.

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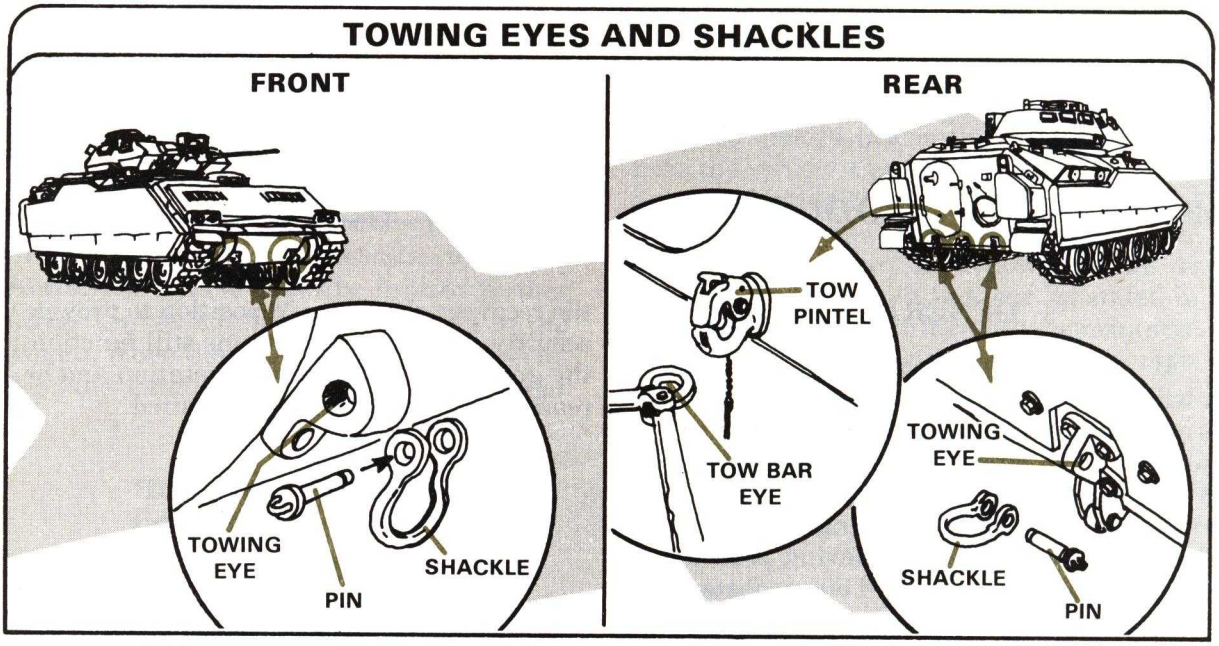
SECTION II. TOWING

TOWING TECHNIQUES

The BFV may have to be towed when disabled or stuck or to start its engine. The vehicle is equipped with towing eyes and shackles on the front and rear of the vehicle. It also has a tow cable stowed on the outside of the rear ramp.



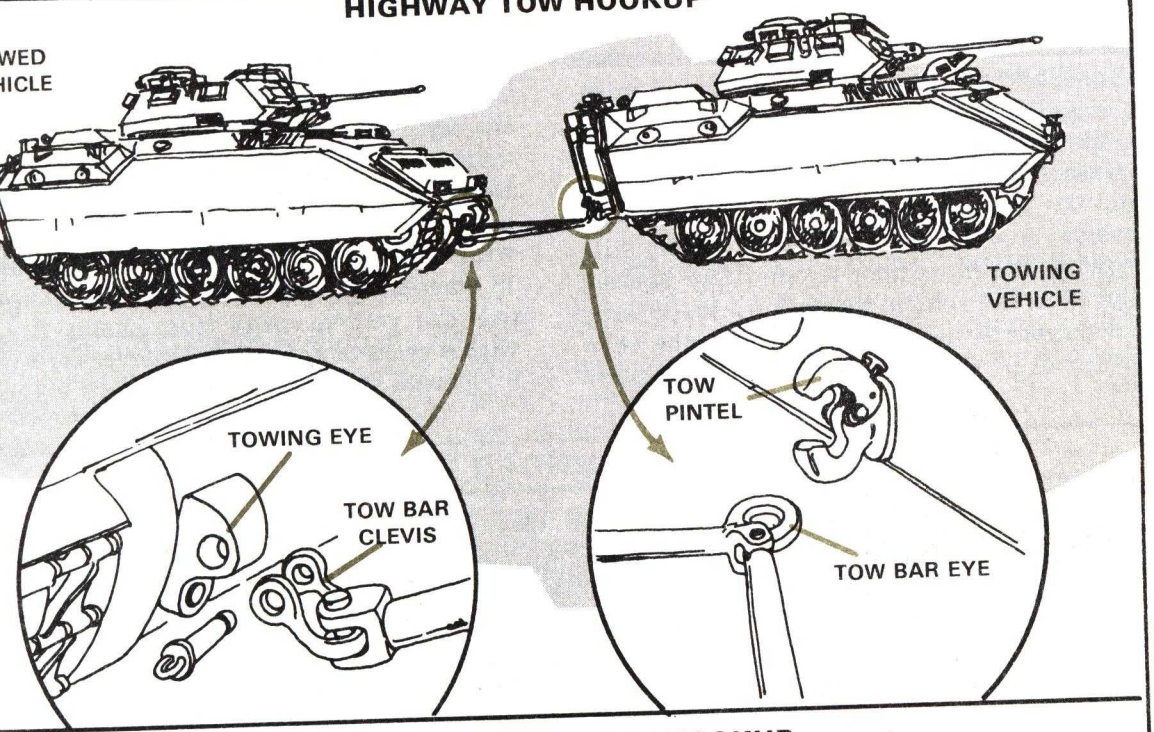
Normally, the terrain or enemy situation will dictate the way to tow the BFV. When not exposed to enemy fire, either the **highway** or the **cross-country tow** may be used. When exposed to enemy fire, the **combat tow** is used. Before any method is used, the master switch should be OFF, the hand brake set, and the range selector placed at N (neutral). Once all connections for towing have been made, the hand brake is released and the range selector is placed in TOW.

Highway Tow. When towing a BFV on a highway, it is best to use a recovery vehicle and the recovery vehicle's tow bar. If a recovery vehicle is not available, another BFV may be used. The tow bar is attached to the front towing eyes of the disabled vehicle. When a tow bar is used, a driver is not required in the towed vehicle.

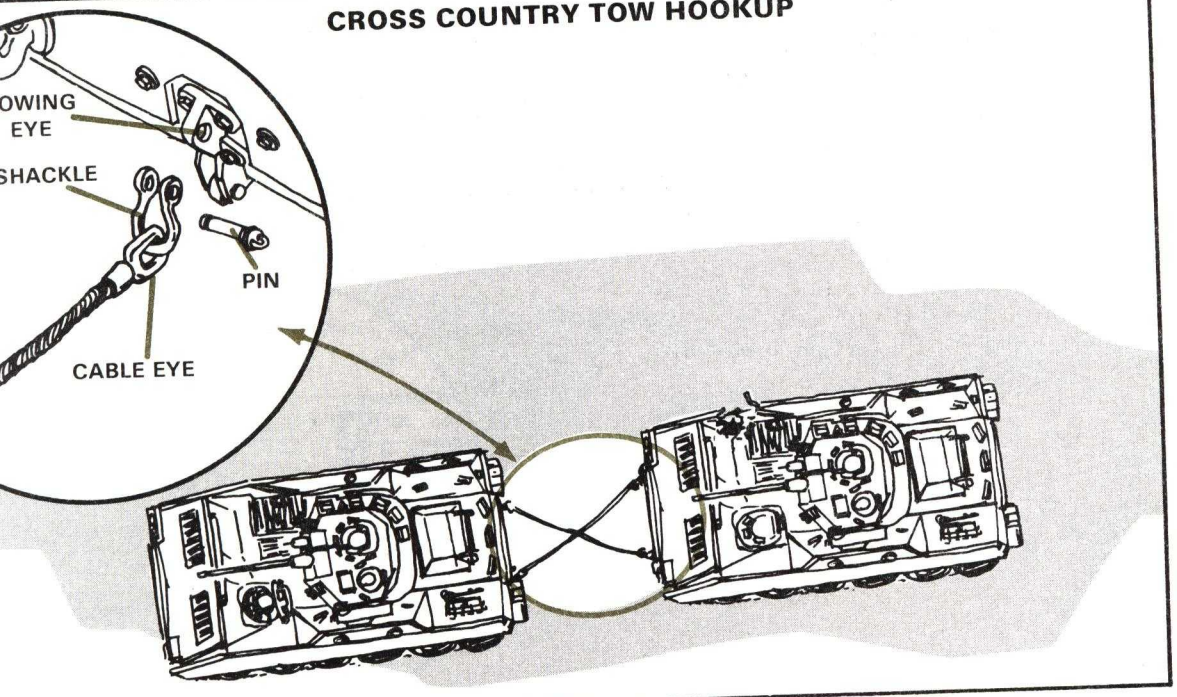
Cross-Country Tow. To tow a vehicle cross-country, two cables are used. It is best to cross the cables in an X position to keep the two vehicles aligned. To tow the vehicle forward, the cables are attached to the front eyes of the disabled vehicle and the rear eyes of the towing vehicle. The vehicle may also be towed moving backward. A driver is required in the towed vehicle to apply the brakes to prevent it from overrunning the recovery vehicle on downgrades or when stopping.

TOWING WHEN NOT UNDER ENEMY FIRE

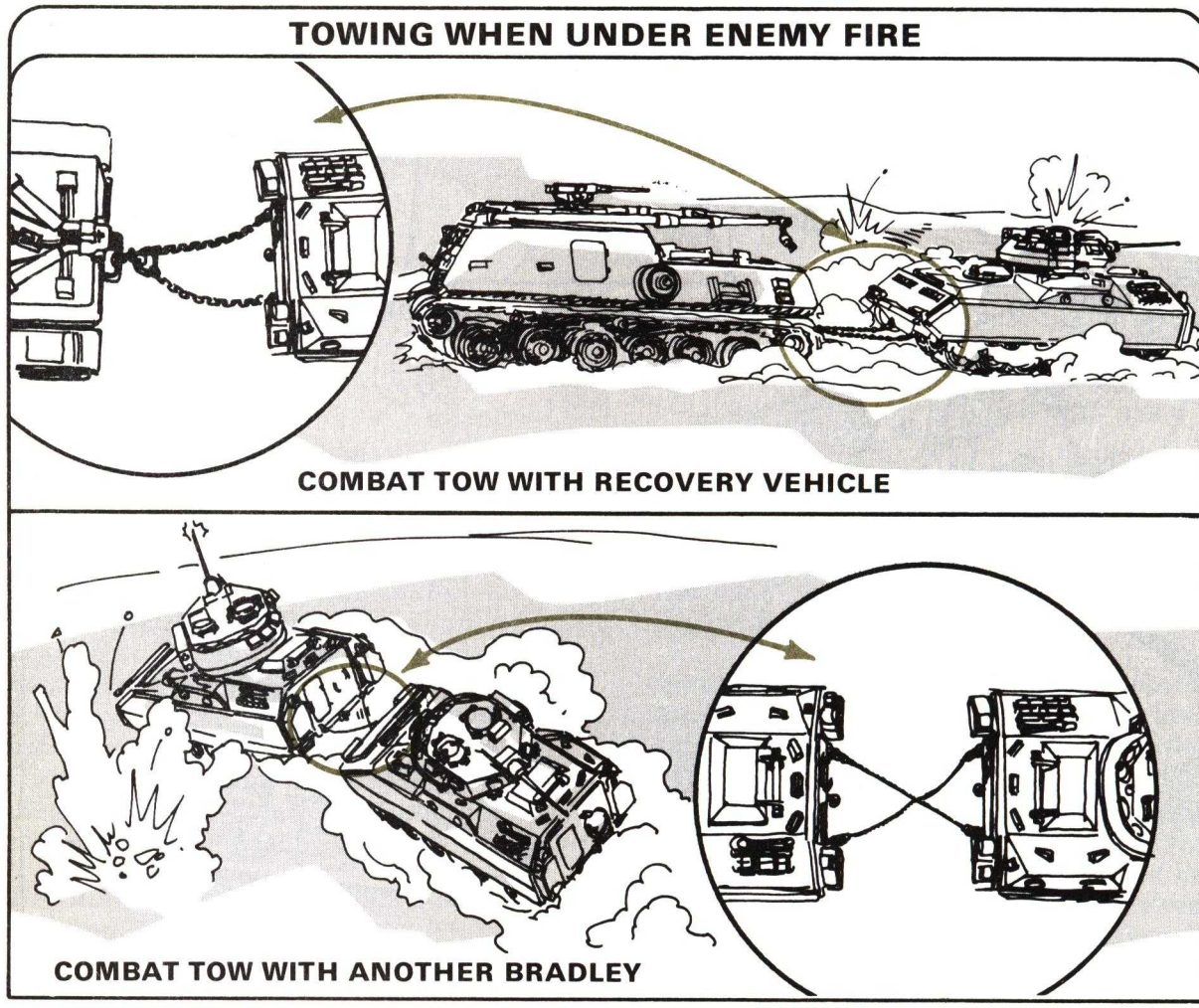
HIGHWAY TOW HOOKUP



CROSS COUNTRY TOW HOOKUP



Combat Tow. When it is necessary to make a towing connection under fire, the combat tow is used by a recovery vehicle to minimize exposure of personnel. A lifting V-chain is attached to the recovery vehicle's tow pintle before the vehicle moves to the disabled vehicle. The recovery vehicle is then moved into the area and backed up as close as possible to the back of the BFV, while still allowing the ramp door to open. One soldier then exits the vehicle through the ramp door and connects the V-chain legs to the rear towing eyes. (Smoke grenades can be used during the hookup to minimize the exposure of the men outside of the vehicle.) The towed vehicle's range selector must be placed in TOW. After hookup, the soldier reenters through the ramp door, and the recovery vehicle moves out, towing the disabled BFV. If a recovery vehicle and lifting V-chain are not available, the same method may be used with another BFV using crossed tow cables. In emergencies, a single cable can be used to pull the vehicle away from enemy fire. As with a cross-country tow, a driver is required to operate the brakes of the towed vehicle.



TOWING PRECAUTIONS

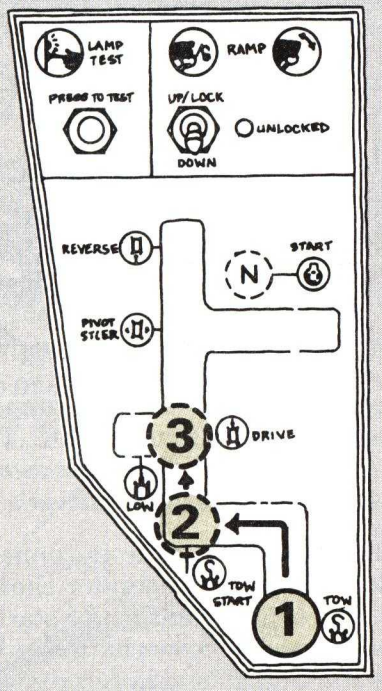
The disabled vehicle's hand brake should be released. The range selector should be placed in TOW. This disables all transmission ranges. The disabled vehicle now has braking control only. Except in an emergency, towing speed should not exceed 8 mph (13 kmph). Reverse towing speed should not exceed 5 mph (8 kmph).

TOW STARTING

When a BFV cannot be started using a slave cable, it may be started by towing. After securely attaching a tow vehicle to the disabled vehicle, and doing all the before-operation preventive maintenance checks and service (TM 9-2350-252-10-1), the master and fuel control are turned ON. With the transmission range selector in TOW, the BFV is towed forward until its speed reaches 10 to 15 mph (15 to 25 kmph). The driver then moves the transmission range selector to TOW START.

When the engine starts, the driver moves the transmission range selector to DRIVE. The driver should signal the towing vehicle with his horn or by visual signal so that both vehicles can be brought to a stop. The cables or tow bar are then disconnected.

TOW START SETTINGS

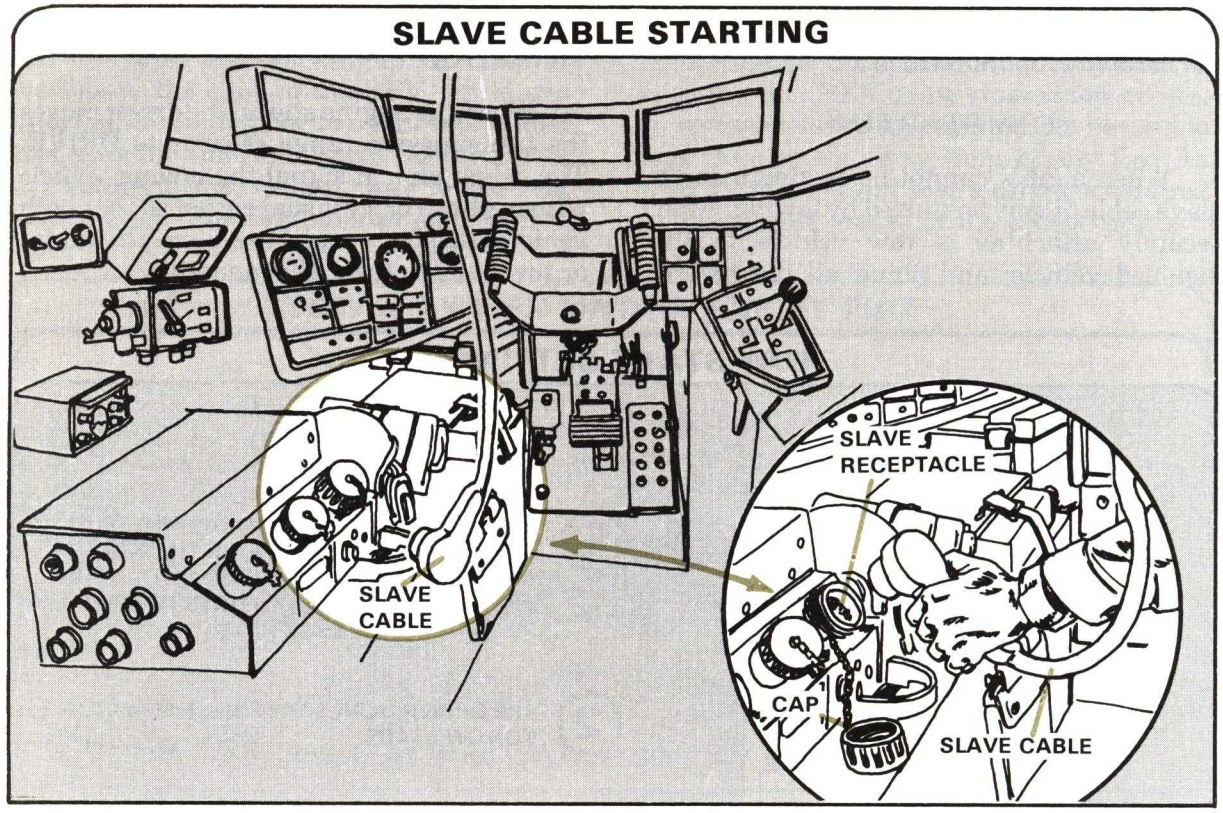


1. WITH THE MASTER POWER AND FUEL CONTROL TURNED ON AND THE TRANSMISSION RANGE SELECTOR IN TOW, THE BFV IS TOWED FORWARD UNTIL ITS SPEED REACHES 10 TO 15 MPH (15 - 25 KMPH).
2. THE DRIVER MOVES THE RANGE SELECTOR TO TOW START.
3. WHEN THE ENGINE STARTS, THE DRIVER MOVES THE RANGE SELECTOR TO DRIVE, SIGNALS THE TOWING VEHICLE TO STOP, AND THE CABLES OR TOW BAR ARE DISCONNECTED.

(1) TOW
(2) TOW START
(3) DRIVE

STARTING VEHICLE WITH SLAVE CABLE

When the vehicle's battery is dead or missing, the engine can be started using a slave cable connected to any 24-volt DC power source.



Before the slave cable is connected, all electrical switches must be off. The slave cable is connected to the slave receptacle at the distribution box in the driver's station.

Once the slave cable is connected, the outside power source operator should apply power. The engine can then be started in the same way as with its own batteries. When the engine starts, it should be left running while the slave cable is disconnected. The same process can be used to start another vehicle with the BFV as the 24-volt DC outside power source.

SECTION III. RECOVERY

GENERAL

Vehicles often become bellied (high centered) on high stumps, rocks, or ridges, or in mire. In this position, the BFV has no traction and is stuck.

VEHICLE BELLIED IN MIRE

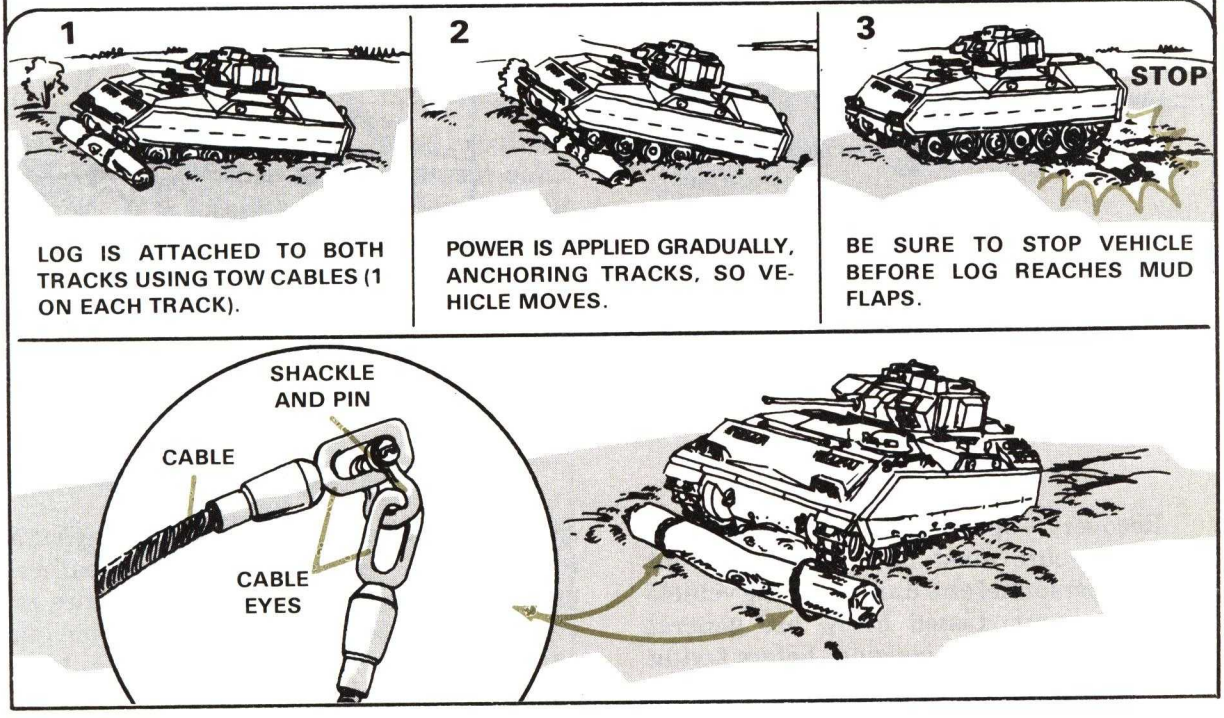
To recover a vehicle stuck in mire, a log should be obtained, long enough to span the width of the vehicle and large enough to support the vehicle's weight. Two cables are used to attach the log to the tracks, one on each track. The log is placed against both tracks. The tow cable is placed so that one end of the cable goes over the log and through one track from the inside. The other end of the tow cable is placed underneath the log. The ends of the cable are connected with a towing shackle and pin. The cable should be connected on the outside of the track for easy disconnecting. The same method is used to attach the log to the track on the other side of the vehicle.

By gradually applying power to the tracks, the slack in the cables will be taken up, pulling the log underneath the tracks until it contacts the mire and anchors the tracks, letting the vehicle move.

CAUTION

Take care to stop the vehicle before the log reaches the mud flaps in the front or rear of the BFV to prevent damage to the tow cables and tracks.

MIRED BFV RECOVERY


1
LOG IS ATTACHED TO BOTH TRACKS USING TOW CABLES (1 ON EACH TRACK).
2
POWER IS APPLIED GRADUALLY, ANCHORING TRACKS, SO VEHICLE MOVES.
3
STOP
BE SURE TO STOP VEHICLE BEFORE LOG REACHES MUD FLAPS.
SHACKLE AND PIN
CABLE
CABLE EYES

VEHICLE BELLIED ON HIGH STUMPS, ROCKS, OR RIDGES

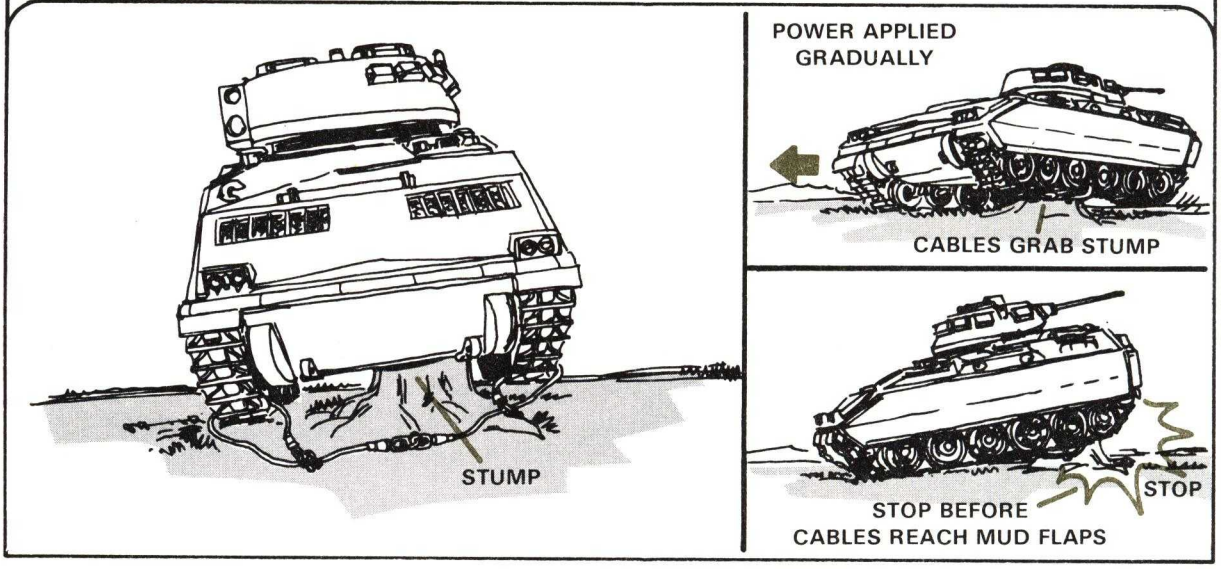
For a bellied disablement other than mire, the tracks can be anchored using just the two tow cables. The tow cables are hooked together and attached to both tracks by passing the ends of the cables through the tracks from the outside and attaching them together in the center with towing shackles and pins.

When power is applied to the tracks, the cable will contact the obstacle and anchor the tracks. The same caution applies — stop the vehicle before the cables reach the mud flaps.

NOTE:

If the methods listed above fail to free the vehicle, the leader must call for the M88 from organizational maintenance.

ANCHORING TRACKS



SECTION IV. SAFETY

GENERAL

Recovery operations are dangerous. Maximum care must be taken to prevent injury to personnel and damage to the vehicle and equipment. Listed below are general safety precautions to consider before trying any recovery operation.

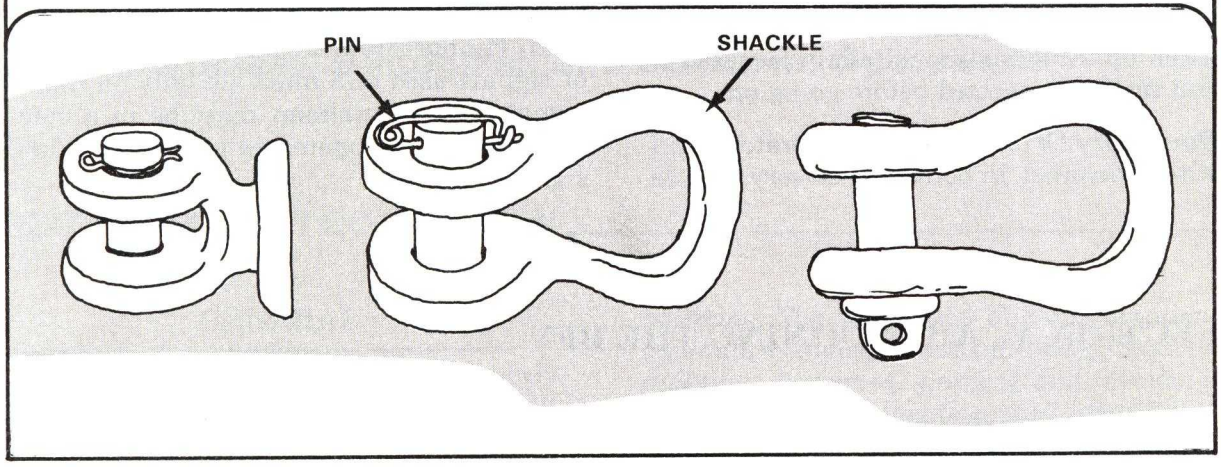
SAFETY PRECAUTIONS

Handling Cables. Personnel handling wire ropes or cables should wear heavy leather-palmed gloves to prevent hand injuries or cuts from broken or frayed wires. A moving cable should never be allowed to slide through the hand, even if gloves are worn.

Care of Cables. Cables should not be drawn over rocks or around sharp corners. Heavy objects should not be dropped on a cable. They could nick or burr the wires, causing them to break. All loops formed in a cable should be removed before force is applied.

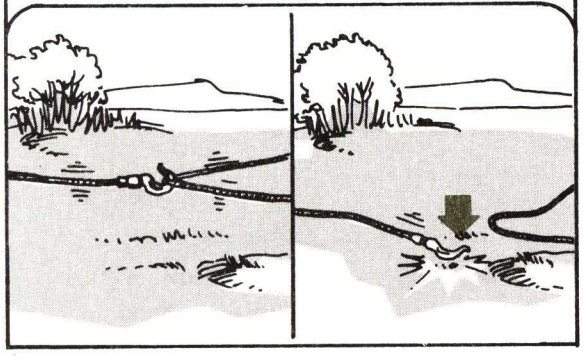
Safety Keys. All safety keys or pins should be in place before force is applied.

SAFETY KEY PINS



Hook Positions. If a hook is used to pull the vehicle, the open part (throat) should point upward. If the hook should straighten out from overload, the rigging will tend to go downward, not upward unrestrained.

USE OF HOOKS



Rigging Between Vehicles. When erecting rigging between vehicles, engines must be off and vehicle brakes applied to prevent possible injury to rigging personnel or damage to vehicles.

Inspecting Rigged Equipment. Equipment should be thoroughly inspected before the recovery operation starts. The recovery vehicle operator should be directed to work the winch enough to remove slack from the rigging, then stop the operation and shut off all engines. The rigging can now be inspected without endangering the personnel. Likewise, if a vehicle is being towed, power should be applied slowly until all tow cable slack is taken up. Engines should again be shut off and rigging inspected before going on.

Operator/Driver Safety. Operators and other personnel, in both the recovery vehicle and disabled vehicle, should keep their hatches closed during a recovery operation and use their periscopes to see hand signals.

Safe Location of Personnel. Before a pull starts, all personnel on the ground must be directed to move safely away from rigging before the operators apply power. A taut cable, released by a sudden break, can backlash and cut a man in half. The minimum safe distance is one and a half times the length of the longest line.

Signalman. For safe control of a recovery operation, there should be only one signalman. The operators must know the meaning of signals used and must act only on those signals. The signalman must be in a safe place where the operators can observe his signals.

SECTION V. ABANDONING THE BFV

GENERAL

Every effort should be made to recover a disabled vehicle. If the enemy situation prevents recovery, men and equipment may have to be loaded on other vehicles, and the disabled vehicle abandoned. An abandoned BFV should be of no immediate use to the enemy and yet should be readily repairable by friendly forces. Functional turret weapons are disabled by removing the buffer from the 7.62-mm coaxial machine gun, and removing the bolt assembly from the 25-mm gun. In addition, all parts, firing port weapons, radios, ammunition, and missiles must be taken from the vehicle or destroyed.

DECISION TO ABANDON BFV

The decision to abandon a vehicle is the responsibility of the platoon leader or senior man present. The vehicle's location should be reported to the next higher headquarters, as covered in the company SOP. (See FM 20-22 and TM 9-2350-252-10-1.)

APPENDIX M

Nuclear, Biological, and Chemical Operations

SECTION I. INTRODUCTION

GENERAL

The three fundamentals of NBC operations are contamination avoidance, NBC protection, and NBC decontamination. An understanding of the principles of these fundamentals will enhance operational readiness and survival on the integrated battlefield.

Avoidance. Contamination avoidance is taking action to reduce the risk of being the target of an NBC attack and to minimize the effects of NBC hazards if you are hit with an NBC attack. Contamination avoidance is the best defense against enemy use of NBC weapons. The four parts of contamination avoidance include: implementing passive defensive measures, warning and reporting of NBC attacks, locating and identifying NBC hazards, and limiting exposure.

Protection. If contamination cannot be completely avoided, units must take protection. Individual protection for each soldier is available in the form of MOPP gear.

Decontamination. If contamination cannot be avoided, you must decontaminate. Decontamination reduces the immediate NBC hazard and the loss of combat potential which helps sustain combat operations.

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III. Chemical and Biological Weapons	M-10

SECTION II. NUCLEAR WEAPONS

EFFECTS

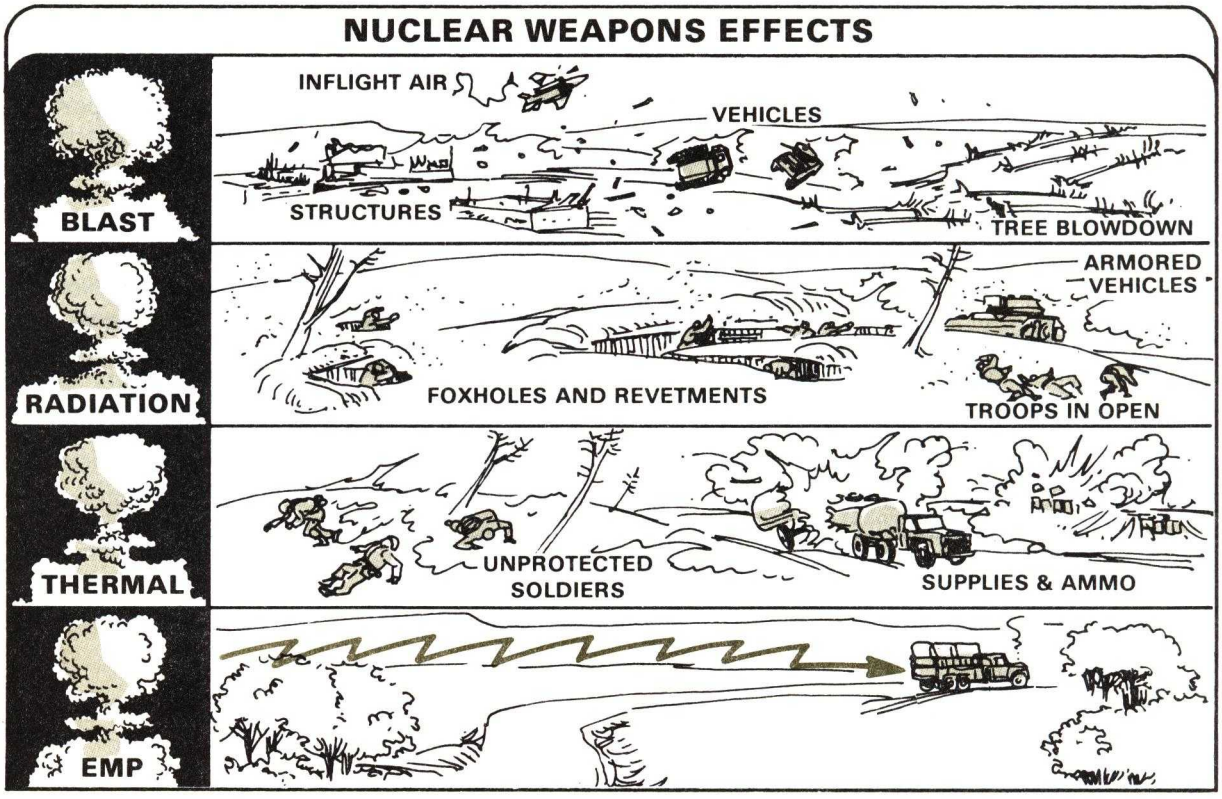
Nuclear weapons produce four primary effects: blast, thermal radiation (heat and light), nuclear radiation, and electromagnetic pulse (EMP). The degree of nuclear effect depends on how close a unit is to the detonation and how well soldiers and equipment are protected.

Blast. When a nuclear weapon detonates, it sends out an intense shock wave in all directions at the speed of sound. The shock wave can collapse buildings, blow down trees, and forcefully throw men and equipment about. The blast effect has two phases, the positive phase or shock wave, and the negative phase, or suction effect.

Thermal Radiation. Thermal radiation produced by a nuclear explosion consists of intense heat and extremely bright light. Unprotected troops exposed to this heat and intense light can be severely burned and blinded. Materials such as wood, plastics, and rubber may melt or burn. The extent of these effects depends on the kind of weapon, weather, and terrain. Fog or heavy battlefield smoke can reduce the effects of thermal radiation. On clear nights, the blinding effect is greater, and night vision devices can be damaged.

Nuclear Radiation. A nuclear weapon produces two forms of nuclear radiation — initial and residual. Both forms of radiation can injure or kill.

Initial radiation occurs during the first instant of the explosion. Since this radiation



travels at the speed of light, the only way to lessen the danger is to be protected before the detonation.

Residual radiation remains after the first minute. It is caused by materials being exposed to the initial radiation and retaining the radiation effects. It is found around the site of the nuclear detonation. If radioactive particles are carried aloft, they become fallout, which may spread over a larger area. Fallout is created by dust sucked into the explosion and later scattered by the wind. Such things as dirt, equipment, and buildings become contaminated from exposure to either initial radiation or fallout.

The human body can survive limited exposure to radiation, but the effects add up. Each dose a person receives adds to earlier doses. Troop exposure to radiation must be measured and recorded so the amount of radiation absorbed can be monitored. Soldiers should be taken out of contaminated areas before they are exposed to an overdose of radiation.

Electromagnetic Pulse. EMP is a massive surge of electrical power. It is similar to a strong radio signal. It comes from the nuclear explosion and is transmitted through the air in all directions. It occurs immediately when a nuclear device explodes. It can damage electrical components of equipment (radios, radars, and vehicles) and weapon systems (TOW and Dragon) if proper precautions are not taken. EMP does not harm soldiers.

WARNING OF A NUCLEAR EXPLOSION OR HAZARD

Nuclear Attack Warning (NUCWARN) messages are used to warn units of a friendly nuclear explosion. The NBC 3 nuclear report is used as a warning of expected contamination. Normally, it is neither necessary nor desirable to transmit the complete NUCWARN message to company-size or platoon-size units.

Messages to companies and smaller units should contain:

- **A proword indicating that the message is a nuclear strike warning.**
- **A brief message, prearranged by SOP, that directs the unit to observe a specific nuclear defense level or an order to evacuate the area.**
- **The expected time of burst.**

Information as to possible enemy use of nuclear weapons will be forwarded to companies and smaller units through the chain of command by the quickest and most secure means possible. It will direct a specific protective posture for these units.

ALARM FOR NUCLEAR HAZARD

As soon as a soldier using a monitoring device detects a nuclear hazard, he should give the alarm to warn others. The alarm must be passed swiftly throughout the unit. The standard alarm is the yell "FALLOUT"; the same warning is used when the platoon moves into an area contaminated by residual radiation.

"ALL CLEAR" is used to indicate that the danger no longer exists. Normally, the all clear signal is first given by the company commander or a platoon leader and then repeated by each soldier when he hears it.

NUCLEAR PROTECTIVE MEASURES

General. Many basic infantry skills and tasks contribute to the platoon's nuclear preparedness. Training and operations must stress:

- **Proper positioning of vehicles and soldiers.**
- **Proper movement by vehicles and soldiers.**
- **Construction of fighting positions with overhead cover.**

The platoon's ability to fight in a nuclear environment, as in any combat situation, depends largely on how well individual and collective tasks have been learned in training. The unit training program must include cross-training so that the loss of any one man will not seriously lessen the platoon's combat effectiveness. When the platoon can do all the individual and collective tasks while employing nuclear protective measures, its chances of continuing to be combat effective on the integrated battlefield are improved.

A soldier can get protection against many nuclear effects by taking cover in a fighting position, culvert, or ditch; behind a hill; or inside a BFV in defilade. In most cases, a fighting position with overhead cover or a BFV in defilade offers the best protection.

When a unit, without warning, is subjected to an enemy nuclear attack, it should take the following actions immediately:

MOUNTED

Personnel exposed in BFV hatches should immediately drop down in the vehicle and close the hatches, door, or ramp. Lower blackout curtains over vision blocks.

DISMOUNTED

When dismounted, exposed troops should immediately close their eyes, fall face down to the ground, and turn their heads away from the blast. They should cover all exposed skin, place their hands under their bodies, keep their faces down in the dirt, and hunch their shoulders forward to cover the backs of their necks. They should stay down until the blast wave passes and debris stops falling.

Nuclear Defense Levels. The tremendous destructiveness of nuclear weapons requires that protective measures be taken not only during or after an attack, but also before the attack. The following table is an example of how nuclear protective measures can be included in an SOP.

Nuclear defense levels (NDL) involve risks. Some missions cannot be done at level C or even B. It may be necessary to accept a higher risk from nuclear effects to accomplish the mission. The ideal level is the one that protects against nuclear effects but still allows mission accomplishment.

NUCLEAR DEFENSE LEVEL A (POSSIBLE)		NUCLEAR DEFENSE LEVEL B (LIKELY)		NUCLEAR DEFENSE LEVEL C (IMMINENT)	
OFFENSE	**DEFENSE**	**OFFENSE**	**DEFENSE**	**OFFENSE**	**DEFENSE**
• Inform personnel and continue with mission.	• Inform personnel. • Increase priority of preparation of fighting positions with at least 18 inches of dirt overhead cover. • Remain near BFV or fighting positions.	• Inform personnel. • Restrict movement away from the vehicle except for mission-essential tasks. • Initiate continuous monitoring of radiacmeter.	• Inform personnel. • Complete fighting positions with at least 18 inches of dirt overhead cover. • Initiate periodic monitoring of radiacmeter.	• Inform personnel. • Place all personnel in vehicle. • Reduce observation through periscopes except for mission-essential tasks. • Initiate continuous monitoring of radiacmeter. • Prepare to cover face with cloth or handkerchief to prevent breathing of fallout (do not use protective mask).	• Inform personnel. • Have all personnel remain in fighting positions. • Place all unprotected personnel in vehicle. • Initiate continuous monitoring of radiacmeter. • Prepare to cover face with cloth or handkerchief to prevent breathing of fallout (do not use protective mask).
• Turn off all nonessential radios. • Disconnect antennas and matching unit cables of unused radios. • One radio per BFV will be wrapped in foil and stowed in BFV.	• Turn off all nonessential radios. • Disconnect antennas and matching unit cables of unused radios. • One radio per BFV will be wrapped in foil and stowed. • Use wire, messenger, or SUT whenever possible.	• Use one radio per BFV. Wrap in foil and stow all other radios. • Remove antennas and disconnect lead-ins of all unused radios. Stow in vehicle.	• Use no more than two radios per platoon (platoon leader and platoon sergeant). • Use wire, SUT, or messenger whenever possible. • Wrap in foil and stow all unused radios in vehicle or fighting positions. • Remove unused antennas, disconnect lead-ins, and stow.	• Use visual signals to control squad and platoon movement. • Use one vehicle radio per platoon. • Wrap in foil and stow all unused radios in vehicle. • Remove unused antennas, disconnect lead-ins, and stow in vehicles.	• Wrap in foil and stow all radios in vehicle or fighting positions. • Use wire communications. • Use one SUT in company command net.
• Secure all loose equipment. • Close and latch all hatches not required to be open.	• Secure equipment by tying it down or placing it inside the vehicle or fighting position. • Close and latch all hatches not required to be open.	• Secure all loose equipment. • Close and latch all hatches not required to be open. • Move in defilade and avoid urban or forest area, if possible. • Leave one TOW in launcher; remove and stow second TOW in vehicle. • Close integrated sight cover when not in use. • Turn off electrical equipment, to include turret drive, integrated sight, and stabilization system, when not in use.	• Secure equipment by tying it down or placing it inside the vehicle or fighting position. • Move BFV to a turret-down position. • Close and latch all hatches not required to be open. • Remove one TOW from launcher and stow in vehicle if not needed. • Close integrated sight cover when not in use. • Turn off electrical equipment, to include turret drive, integrated sight, and stabilization system, when not in use.	• Secure all loose equipment. • Close and latch all hatches not required to be open. • Move in defilade and avoid urban or forest areas, if possible. • Remove and stow TOW missiles (if not needed). • Remove and stow firing-port weapons. • Close integrated sight cover when not in use. • Turn off all electrical equipment not in use (turret drive, integrated sights, stabilization system).	• Secure equipment by tying it down or placing it inside the vehicle or fighting position. • Move vehicle to a defilade position, avoiding forests or urban areas if possible. • Traverse turret to rear and lock traversing mechanism. • Remove and stow all firing port weapons. • Remove and stow TOW missiles. • Close integrated sight cover. • Close and latch all hatches. • Cover vision blocks from inside when tactical situation allows. • Turn off all electrical equipment, to include turret drive, integrated sight, and stabilization system. • Prepare to turn turret toward detonation after positive phase, to avoid negative phase of shock wave.

PROCEDURES FOLLOWING A NUCLEAR DETONATION

The following actions should be taken automatically and without orders right after the shock wave from a nuclear detonation passes. Keep in mind that several detonations may occur within a short period of time.

Individual

- Check for injuries and give emergency first aid as necessary.
- Report status to immediate supervisor.

Units

- Put dismounted radios back into operation and monitor nets.
- Return the vehicle to a combat-ready status. Connect all antenna lead-ins, return radios to the mounts, replace antennas, and turn radios on. Turn on all other necessary equipment in the vehicle. Re-arm the TOW launcher and run a circuit check. Inspect the vehicle for damage and replace firing port weapons.
- Report status of personnel and equipment to next higher headquarters.
- Start continuous monitoring with the radiacmeters.
- Report nuclear effects as required by company SOP.
- Platoon leaders should require periodic reports from squad leaders on dosimeter readings and report readings to the company. (The determination of the acceptable radiation level should be made beforehand at company and battalion level and passed to the platoons and squads.)
- Continue mission.

NBC 4 REPORTS

The NBC 4 report is used to report the contamination of a nuclear hazard, or a chemical hazard.

The platoon should continue to monitor radiation levels and report findings to the company commander, using the NBC 4 format. When the accumulated radiation dose of a platoon or squad is determined by the company commander to be unacceptable, the entire unit should be replaced if possible. The platoon leader should be prepared to receive new squads, integrate them into the platoon, and insure total dose of the squads is balanced as much as the tactical situation allows. Squads that have received smaller doses should be considered for missions that probably will result in added exposure to radiation.

NBC 4 REPORT

NBC 4 (NUCLEAR)		
	Precedence Date/time (local or ZULU time, state which) Security Classification From To Type of Report	
LETTER	MEANING	EXAMPLE
Q.	Location of reading (UTM)	Q. LB 123987
R.	Dose rate (rad/hr). The words "initial," "increasing," "peak," or "decreasing," may be added.	R. 35 INITIAL
S.	Date/time of reading (local or ZULU, state which).	S. 201735 (local) Q. LB 129965 R. 60 S. 201650 (local) Q. LB 146808 R. 27 INCREASING S. 201710 (local)
NBC 4 (CHEMICAL)		
H.	Type of Agent	Nerve
Q.	Location of sampling/type	FS135642 Air
S.	Date/time of detection	170810Z

MONITORING RADIATION LEVELS

Dosimeter. One IM93/UD dosimeter is in the platoon headquarters and one is in each squad. They are used by specified squad members to measure the total amount of radiation exposure (dose) of the squad. The IM93/UD will measure the total dose of gamma radiation. Its replacement, the IM185/UD will measure gamma rays, neutrons, and X-rays and, therefore, will give a more accurate indication of total dose. (Centigrays [cGy] are units of measure for radiation, formerly called "rads.") The PP-1578/PD charger is used to zero the IM93/UD. The PP-4370/PD is used to zero the IM185/UD.

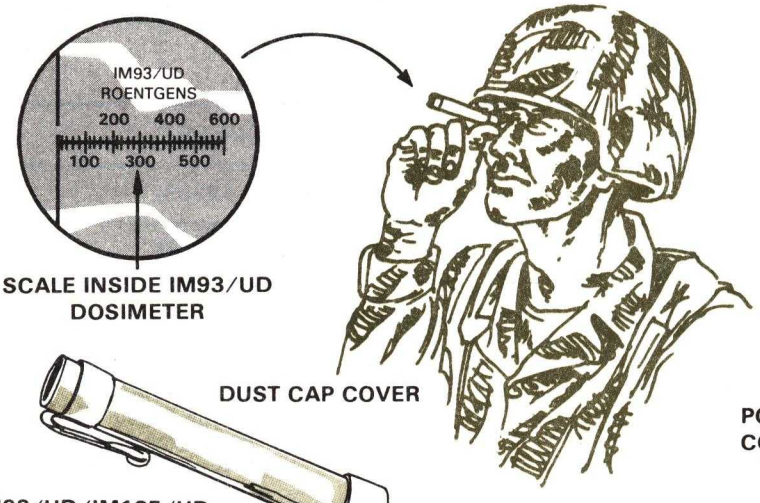
Accurate dose records must be kept to avoid overexposing troops and to keep the total dose relatively equal within a platoon. If a squad is deployed under its leader's control the dosimeters should be carried and monitored by the dismount team. If the platoon is deployed with a dismount element and a fighting vehicle element, a dosimeter should be monitored by each element leader.

To read the dosimeter, remove the dust cover and look at a light source through the dosimeter. An artificial light, such as a flashlight, is needed at night to read the dosimeter.

If the dust cover is lost, a piece of tape must be used to close the open end.

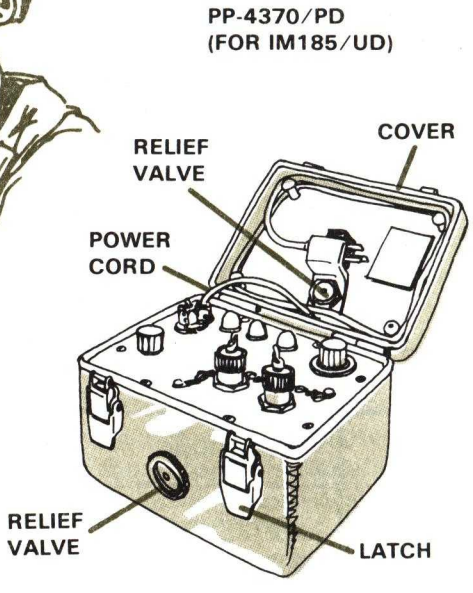
The dosimeter should be zeroed every 24 hours or when the total radiation dose reaches or exceeds 150 cGy. Before zeroing

THE DOSIMETER AND RADIAC DETECTION CHARGER



NOTE:

For military purposes, one roentgen equals one cGy. The radiation received by a man is measured and expressed in cGy.



he dosimeter, the total dose reading must be ecorded.

Radiacmeter. The radiacmeters issued to BFV-equipped units measure the radiation dose rate present at any particular time and ocation.

The IM174/PD series radiacmeter is used for area monitoring and surveying. It is used by a survey team designated by the platoon leader.

For each instrument, the platoon leader should assign a primary and an alternate operator. These soldiers must be trained in instrument maintenance and how to use the instruments for radiological monitoring.

Monitoring. Monitoring may be periodic or continuous.

During **periodic monitoring,** the platoon routinely monitors selected points within its area at least once an hour. The NBC defense annex of the company SOP should prescribe the procedures for periodic monitoring.

All units start **continuous monitoring** when they get a fallout warning; when a nuclear burst is reported, seen, or heard; when radiation of 1 cGy/h is detected by periodic monitoring; or when ordered to by the company commander. Continuous monitoring stops on order from higher headquarters or when the dose rate falls below 1 cGy/h. Units doing continuous monitoring while moving continue doing it until the move is completed, even if the dose rate falls below 1 cGy/h.

When the platoon moves into a new area, the radiation level should be checked before any troops dismount their vehicles. If the radiation level is within acceptable limits, the designated radiacmeter operator then dismounts and conducts a survey of the area.

When operating in areas with radioactive contamination, rubber overshoes should be worn when outside the vehicle, and then removed before remounting. This cuts down on contamination inside the vehicle. The overshoes should be stowed in the bustle rack on the outside of the BFV. Chemical booties should not be used for this purpose; the excessive wear will decrease their effectiveness against chemical agents.

OPERATIONS IN RESIDUAL RADIATION AREAS

Once nuclear weapons have been employed, units may have to move through areas that are contaminated from radioactive fallout. The following protective measures should be taken to reduce exposure to radiation:

- **Close all vehicle hatches. In most cases, the BFV provides adequate protection from residual radiation. Additional protection can be gained by covering the floor of the BFV with a layer of sandbags.**
- **Provide for at least a 24-hour supply of uncontaminated food and water for each soldier in the unit. Water and rations should be stowed inside the vehicle, and not in the external tailbox.**
- **Move as rapidly as possible through the area. Use movement formations, such as a line or wedge, to reduce the amount of dust or mud thrown onto trailing vehicles.**
- **Avoid swallowing contaminated dust; wear a scarf or handkerchief over the nose and mouth.**
- **Monitor radiation levels for each squad and try to minimize exposure of troops, especially those who have higher radiation dose levels.**
- **Drink and eat only from approved sources.**

RADIOLOGICAL DECONTAMINATION

Fallout emits radiation that damages body cells and can contaminate equipment. Once fallout has stopped or a unit has left a contaminated area, individuals decontaminate themselves and their equipment.

Individual Decontamination. Brush or wash clothing and equipment thoroughly to remove dust particles. This should be done away from the position that the unit will occupy.

Bathe, preferably by showering, and change clothes.

If there is a great deal of dust in the air, wear a scarf or handkerchief covering the nose and mouth. The handkerchief can be disposed of when it becomes contaminated. DO NOT use the protective mask for this purpose unless there is a chemical threat. The protective mask will hold the dust in the filters and become contaminated.

Equipment Decontamination. Decontaminate the immediate area around fighting positions or vehicles by turning over soil (down at least 7 inches).

Wash the BFV, individual weapons, and crew-served weapons in a stream, insuring that decontamination is done downstream, or with a hose in a specially designated decontamination area or in an area away from the unit's position. This can also be done by requesting support of the battalion's power-driven decontamination equipment.

SECTION III. CHEMICAL AND BIOLOGICAL WEAPONS

THE CHEMICAL OR BIOLOGICAL ENVIRONMENT

Threat forces have both chemical and biological weapons that may be used separately, together, or with nuclear and conventional weapons. No matter how these weapons might be used, the BFV platoon and squad must be able to survive and carry on the fight. To insure this, troops must be trained to meet the NBC standards of proficiency prescribed in FMs 21-2/21-3 and FM 3-100.

CHARACTERISTICS OF CHEMICAL AND BIOLOGICAL AGENTS

Chemical agents can be selected to give a range of effects from lethality to incapacitation. Chemical agents may be delivered as a gas, liquid, or spray. Use of a mixture of agents (such as nerve and choking agents), besides causing casualties, can be used to cause confusion. Artillery, mortars, rockets, aircraft spray, bombs, and mines can be used to deliver chemical or biological agents. The characteristics of the chemical agents soldiers can expect on the battlefield are as illustrated.

Biological agents produce disease. These agents may be dispersed by generators, artillery, bomblets, rockets, and aircraft. They also may be spread by the release of insects, such as flies, mosquitos, fleas, and ticks.

CHEMICAL AGENT CHARACTERISTICS

	TYPE OF AGENT			
	NERVE	**BLISTER**	**BLOOD**	**CHOKING**
HOW NORMALLY DISSEMINATED	Aerosol or Vapor. Liquid Droplet.	Liquid Droplet.	Vapor (gas).	Vapor (gas).
SYMPTOMS IN MAN	Difficult breathing, drooling, nausea, vomiting, convulsions, dim vision, unexplained runny nose, and tightness in the chest.	Mustard, nitrogen mustard, - no early symptoms. Lewisite, mustard lewisite - searing of eyes and stinging of skin. Phosgene Oxine - irritation of eyes and nose.	Increased or decreased breathing rate, nausea, dizziness, dull throbbing headache. Irritation of eyes, nose, and throat.	Coughing, choking, nausea, headache, and tightness in chest.
EFFECTS ON MAN	Incapacitates, kills if high concentration is inhaled. Incapacitates; kills if contaminated skin is not decontaminated rapidly.	Blisters skin, is destructive to respiratory tract; can cause temporary blindness. Some agents sting and form wheals on skin.	Incapacitates; kills if high concentration is inhaled.	Damages and floods lungs; may cause death.
INDIVIDUAL FIRST AID	Give nerve agent antidote Mark 1. Artificial respiration may be necessary.	Same as treatment for 2d or 3d degree burns.	None.	For severe symptoms, avoid movement and keep warm.
INDIVIDUAL DECONTAMINATION	M258A1. Flush eyes with water. Decontaminate skin using M258A1 kit.	Flush eyes with water. Decontaminate skin with M258A1 kit or wash with soap and water.	None.	None.
PROTECTION REQUIRED	Protective mask and protective clothing.	Protective mask and protective clothing.	Protective mask.	Protective mask.

EFFECTS OF CHEMICAL AGENTS

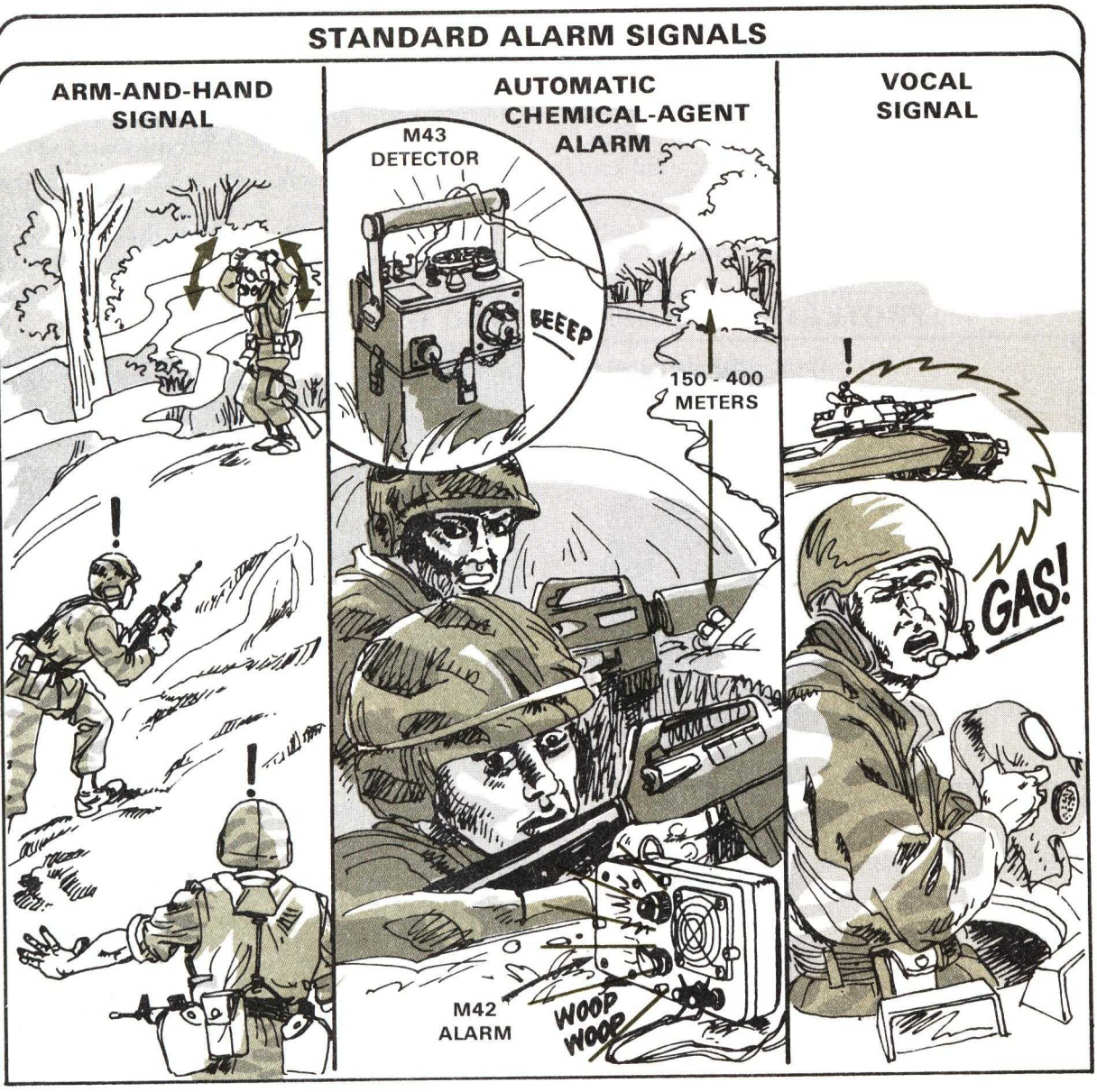
Chemical agents enter the body through the eyes, nose, mouth, or skin. Liquid agents may contaminate equipment, the ground, and foliage. The agent may stay for hours or days and be a serious hazard to unprotected troops.

Chemical agents cannot destroy the BFV or its equipment. They can restrict equipment use until the equipment is sufficiently decontaminated to reduce the hazard. At platoon level, soldiers can decontaminate only the mission-essential areas (driver's controls, gunner's controls, and individual weapons). So, all personnel must continue to wear protective masks, overgarments, overboots, and gloves, once chemical contamination has occurred. The platoon leader and squad leaders must know what their responsibilities are and be familiar with the techniques for decontamination operations. Each company should have a specially trained decontamination team (AR 220-58) with proper equipment (discussed later) to do the job.

Liquid chemical agents can restrict the use of terrain and buildings. Infantry platoons cannot decontaminate terrain. That is usually done naturally by the weather. Contaminated areas may be either bypassed or crossed. They are bypassed whenever possible. When crossing is absolutely necessary, protective equipment is worn. Once across the area, soldiers and equipment should be decontaminated as soon as the situation permits.

ALARMS FOR CHEMICAL HAZARD OR ATTACK

When a soldier detects a chemical hazard, he must immediately stop breathing, mask, and give the alarm. The alarm should be repeated immediately by every soldier after masking.



Standard alarms include the vocal signal "GAS;" prescribed arm-and-hand signals; automatic chemical-agent alarms; rapid and continuous beating on any metal object that produces a loud noise; a succession of short blasts on a vehicle horn or any other similar device or a broken warbling siren sound (example, 10 seconds on, 10 seconds off).

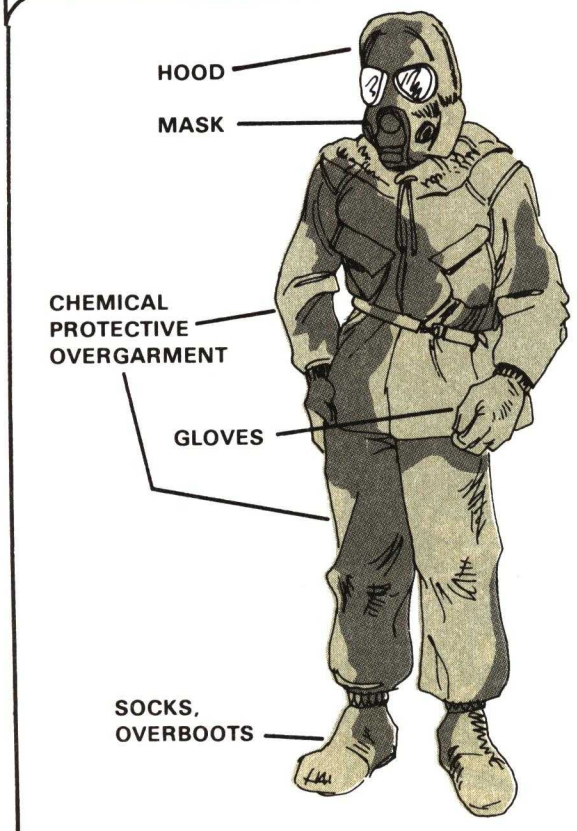
The vocal signal, "ALL CLEAR," is used to indicate that the danger no longer exists.

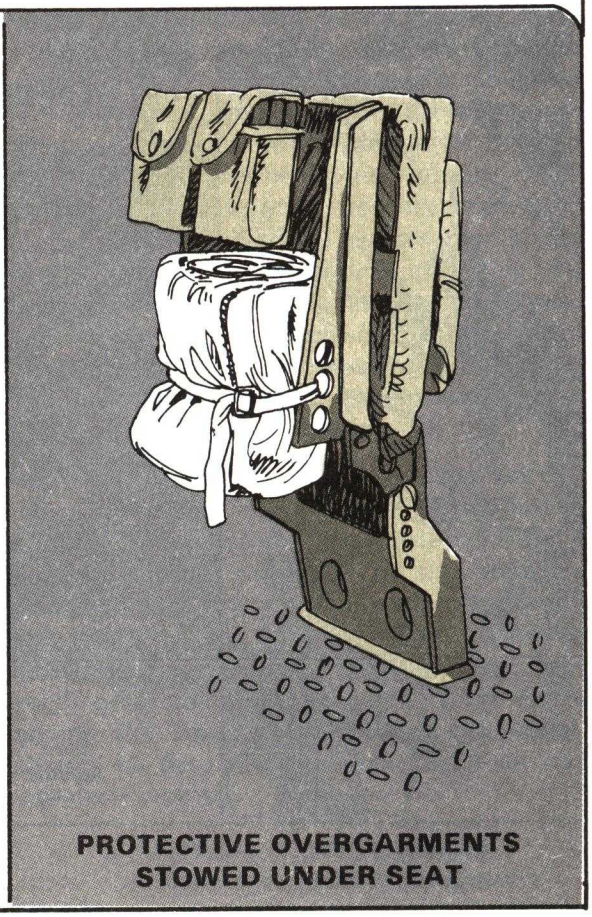
Normally, it will be initiated by leaders (company commander or platoon leader), after prescribed unmasking procedures have been completed.

PROTECTIVE MEASURES IN CHEMICAL AND BIOLOGICAL WARFARE

Chemical Attack. A soldier's primary protection against chemical attack is his protective mask. The mask protects against inhalation of chemical agents.

PROTECTIVE EQUIPMENT AND OVERGARMENTS





PROTECTIVE OVERGARMENTS STOWED UNDER SEAT

To be fully protected against liquid chemical agents, soldiers must wear the chemical protective overgarments, the mask with hood, overboots, and rubber gloves.

If enemy use of chemical weapons is likely, soldiers in the vehicle should wear protective masks on their chest to hasten masking. If the commander directs, or the mission oriented protection posture (MOPP) status dictates, the protective overgarments and masks will be worn rather than carried in the stowed positions.

Once a chemical hazard is detected, all individuals should immediately mask and put on their protective overgarments if they are not already wearing them. It is difficult for everyone to put on protective overgarments at the same time in the BFV. Donning the overgarments is faster when individuals in seats 1, 3, 5, 7, and 8 dress while individuals in seats 2, 4, 6, and 9 keep up observation. Once the individuals in the first group have their overgarments on, they then take over observation while the rest of the squad dons overgarments. In this way, some security is maintained, and confusion while dressing in the vehicle is kept to a minimum.

CONDITIONS REQUIRING MASKING

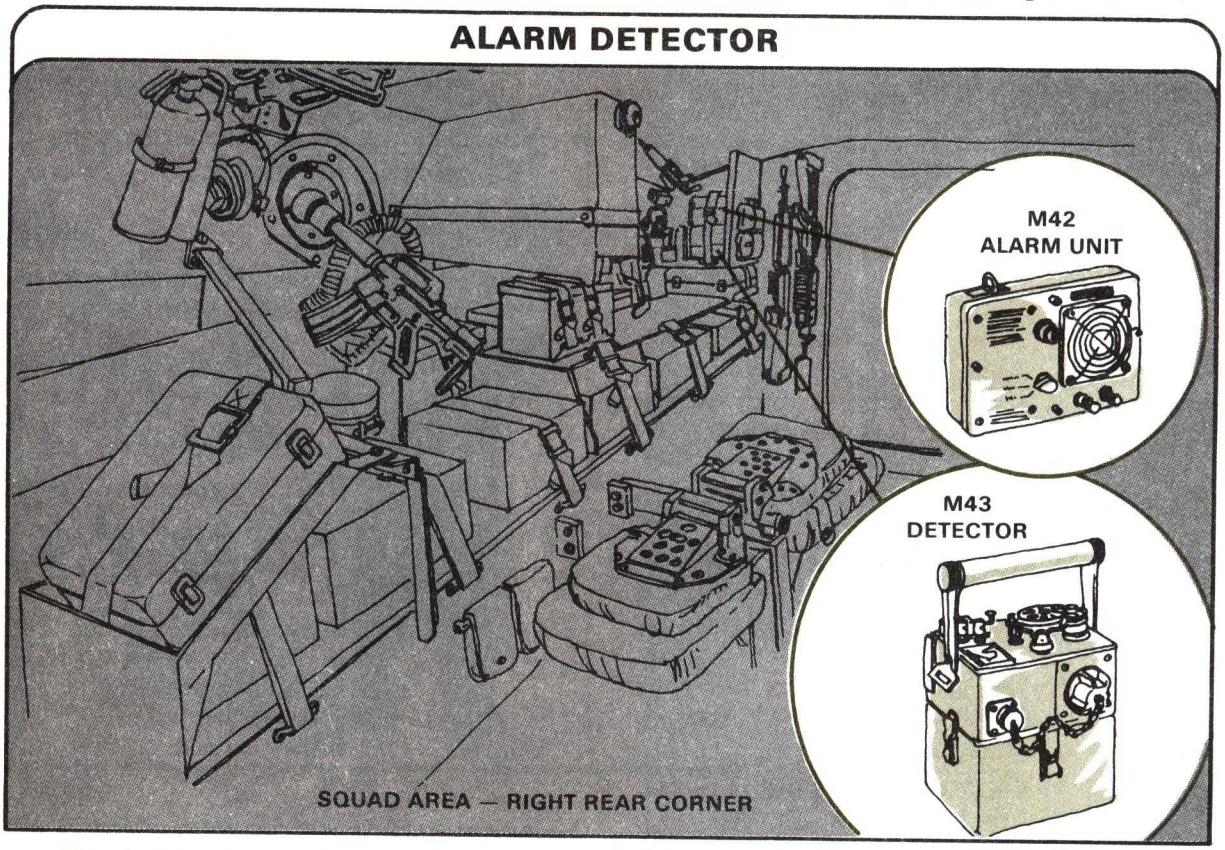
If an attack is reported to be imminent or if chemical attacks have already been employed by enemy forces, individuals should automatically mask when:

- **Chemical alarms or detection kits indicate presence of chemical agents.**
- **Any artillery, mortar, rocket, or aircraft attack with other than high explosive munitions occurs on or near their position.**
- **Smoke or mist of an unknown source arrives in the area.**
- **A chemical attack is suspected for any other reason, such as enemy soldiers seen wearing protective masks and clothing, or presence of dead animals or people with no outward sign of injury.**
- **The unit must enter an area known to be or suspected of being contaminated by a chemical or biological agent.**
- **For no obvious reason, soldiers have any of the following symptoms:**
  1. **A runny nose.**
  2. **A feeling of choking or tightness in the chest or throat.**
  3. **Blurred vision or difficulty in focusing.**
  4. **Irritation of the eyes, nose, or throat.**
  5. **Difficulty in, or increased rate of, breathing.**

Biological Attack. Definite information on enemy use of biological agents may come down from higher headquarters. Still, each unit must be alert to the danger and report right away any unusual occurrence of disease. The best local defense against biological warfare is strict enforcement of all preventive medical (prescribed immunizations) and field sanitation measures as well as high standards of personal hygiene. Soldiers should eat and drink only from approved sources.

CHEMICAL-DETECTION EQUIPMENT

The M8 automatic chemical-agent alarm produces an audible or visual signal when it detects the presence of chemical agents in the air. The M43, the detector of the M8 alarm, will detect nerve, blood, and choking agents. (The M43A1 only detects nerve agents, but it detects them at lower concentrations than does the M43.) It is stowed inside the BFV on the right rear wall. To detect chemical agents, the M8 alarm must be removed from the vehicle, assembled according to TM 3-6665-225-12, backpacked, or mounted externally, and placed into operation.



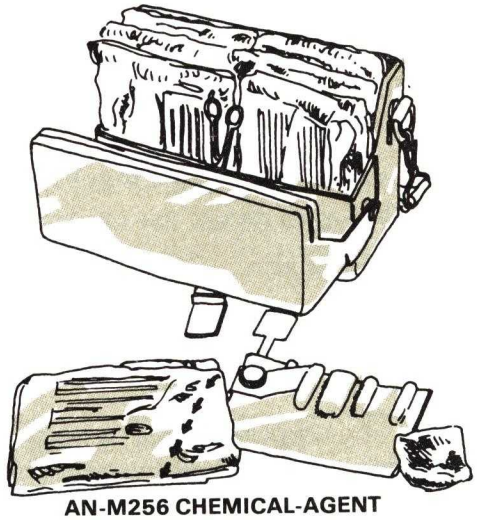
The M256 chemical-agent detector kit is issued one per squad. It is used to detect sublethal vapor concentration of nerve, blister, and blood agents. The kit should be used when a chemical attack is reported to be imminent or when the presence of a chemical agent is suspected. To learn how to use the detector kit correctly, each platoon should select soldiers to receive the required training. The M256 stows on

the BFV in the place that is stencilled M15A2A detector kits.

ABC-M8 chemical-agent detector paper comes in a 25-sheet booklet. The booklet is a part of the M256 chemical-agent detector kit. The paper sheets are treated with chemicals that turn dark green, yellow, or red when in contact with liquid V-type nerve agents, G-type nerve agents, or blister (mustard) agents, respectively. This paper must touch the liquid agent to be sure of a positive test; it does not detect vapor. It is best suited for use on nonporous material, such as metal. The test is not always reliable on porous material (such as wood or rubber) that can absorb the liquid agent. Many substances (including some solvents and decontaminants) can also cause a color change in this paper; hence, it is only reliable as an indicator of the possible presence of a chemical agent. Positive detector-paper tests should be verified using the chemical-agent detector kit.

The M9 (LAD) chemical-agent detector paper is a new item. It is grey-green in color and has an adhesive back. The adhesive back is protected by a white paper backing until dispensed from the roll. The paper is 2 inches (5.1 centimeters) wide and 30 feet (9.1 meters) long. Each roll is contained in a cardboard dispenser equipped with a cutter edge. The dispenser is packaged in a foil-type shipping bag. A resealable plastic storage bag is included for storing the dispenser after removal from the shipping bag. The detector paper will detect a chemical agent under all types of weather conditions. It is worn by an individual or attached to a vehicle or a piece of equipment. The detector paper indicates the presence of a liquid chemical agent. When a liquid chemical agent touches the paper, a pink, red, red-brown, or red-purple colored spot appears. The spot may be as small as a pin head or as large as a dime.

DETECTOR KIT



AN-M256 CHEMICAL-AGENT DETECTOR KIT

INDIVIDUAL ACTIONS BEFORE A CHEMICAL ATTACK

If a unit determines that it is subject to an imminent chemical attack or downwind vapor hazard, each individual should take the following precautionary measures:

- **Assume MOPP level 2, 3, or 4 (depending on the situation).**
- **Attach M8/M9 paper to personnel and vehicles.**
- **Cover as much equipment as possible.**
- **Place chemical agent alarm into operation.**
- **Ensure decontamination equipment is accessible.**
- **Be prepared to move from location.**

INDIVIDUAL ACTIONS DURING A CHEMICAL ATTACK

Soldiers may be affected by a chemical attack directly on their position or upwind from their position. In either case, when an individual recognizes or is alerted to a chemical attack, he should immediately take the following defensive actions:

- **Stop breathing.**
- **Put on his protective mask.**
- **Clear mask, check for seal.**
- **Give the alarm.**
- **Don protective clothing if not on already.**
- **Continue the mission.**

If the attack is recognized as a chemical spray attack, soldiers should use a protective cover, such as a poncho or shelter half, to further protect themselves from liquid droplets. After the spray has stopped falling, individuals can throw off the cover, taking care to avoid contaminating clothing and equipment.

When friendly forces use chemical agents, the headquarters directing the fire mission will provide the necessary troop safety information to friendly units that may be affected by the mission. Individuals take the same protective measures they would take against a similar type of enemy chemical attack.

INDIVIDUAL ACTIONS AFTER A CHEMICAL ATTACK

Each soldier should remain masked and continue his mission. He should give any needed first aid to any casualties in his immediate vicinity and report the local casualty status to his next higher leader. Contaminated skin, clothing, and equipment should be decontaminated as soon as possible.

CONDITIONS FOR UNMASKING

NOTE

After a chemical attack, troops should not unmask until authorized by their immediate commander.

In the absence of command guidance, the procedures described below are followed by the senior person present.

Procedures When a Detector Kit is Available. The chemical-agent detector kit M256 is used to test for the presence of chemical agents. If there is not any evidence of agents, two individuals unmask for 5 minutes, then remask. They are observed for chemical-agent symptoms for 10 minutes in a shady area. (A shady area is used because light will cause contraction of the pupils, which could be wrongly interpreted as a nerve-agent symptom.) If no symptoms appear, the rest of the troops may safely unmask.

Procedures When No Detector Kit is Available. The following is an emergency field expedient when friendly elements have been masked for prolonged periods, when there are no remaining signs of chemical agent use, and when the unit has no detector kit. Two soldiers are selected to hold deep breaths, break the seals of their masks, and keep their eyes wide open for 15 seconds. They then clear their masks, reseal them, and wait for 10 minutes. If symptoms do not appear after 10 minutes, the same soldiers again break their seals, take two or three breaths, and clear and reseal their masks. After another 10-minute wait, if symptoms have not developed, the same soldiers unmask for 5 minutes and then remask. After 10 more minutes, if symptoms have not appeared, the rest of the group can safely unmask. They should all remain alert for the appearance of any chemical symptoms.

MISSION ORIENTED PROTECTION POSTURE

Once chemical agents have been employed or while the threat of enemy chemical attack exists, the unit commander decides whether to keep all troops masked and in chemical protective clothing, or only a certain number. This decision is based on the estimated threat of enemy use of chemical weapons, mission of the unit, type of activity required, and temperature. The steps taken are expressed as a MOPP level. Whenever possible, the commander specifies the MOPP level before the mission. He may later direct that the protection be modified, based on his on-the-spot estimate of the situation and operational limitations.

The MOPP level directed by the unit commander will specify what equipment to wear and what precautionary measures are to be employed. Illustrated is the protective clothing and equipment required under the various MOPP conditions. Additionally, there is a special category of MOPP known as "mask only." The "mask only" command may be given if there is no transfer hazard and if the agent is determined to be non-persistent. These levels apply to the individuals inside or outside the vehicle in all cases.

MOPP LEVELS AND PROTECTIVE EQUIPMENT

MOPP	OVERGARMENT	BOOTIES	MASK/HOOD	GLOVES
0 (UNLIKELY)	Carried	Carried	Carried	Carried
1 (POSSIBLE)	Worn, opened or closed based on temperature	Carried	Carried	Carried
2 (POSSIBLE)	Same as MOPP 1	Worn	Carried	Carried
3 (LIKELY)	Same as MOPP 1	Worn	Worn, hood opened or closed based on temperature	Carried
4 (IMMINENT)	Worn, closed	Worn	Worn, closed	Worn
MASK ONLY (SPECIAL CATEGORY)	Carried	Carried	Worn	Carried

The following factors should be considered by the platoon and squad leader when working under any of the MOPP conditions.

Heat Exhaustion. Soldiers operating at moderate to heavy work rates while in chemical protective gear may experience heat exhaustion (dizziness and fainting) at

any time, especially in hot weather. Because of increased sweating, they will need more drinking water than normal.

Fatigue. Soldiers in full chemical protective clothing and equipment tend to experience fatigue because of such factors as mask breathing resistance, rise in body temperature from work energy and solar heat, and psychological and physiological stress. This condition of fatigue increases the need for more rest breaks and sleep to maintain individual alertness and efficiency.

Senses. Soldiers who are required to perform duties involving the senses or related functions, such as manning an observation post, tend to operate at lower levels of efficiency while wearing protective equipment. Individual performance levels depend on training and proficiency. Even simple functions, such as talking on the radio and looking through weapon sights, become difficult while wearing the protective mask.

Personal Needs. Soldiers cannot be in full chemical protection for indefinite periods and still attend to certain personal needs, such as eating, caring for wounds, shaving, and eliminating body wastes. The platoon leader should plan for these needs by coordinating with the company commander for movement to a decontaminated area, by regular detection checks for contamination and chemical agents in an area designated for personal needs, and by keeping the chain of command informed of the effects on the platoon during prolonged operations in a contaminated area.

CHEMICAL REPORT

Once protective measures have been taken after a chemical attack, the platoon leader must send a report to his company headquarters. The format for the repor should be prescribed in the unit SOP (NBC report).

CHEMICAL DECONTAMINATION TECHNIQUES

When a force is chemically contami nated, its combat potential drops. In order to minimize the erosion of combat potential, decontamination must be performed.

The seven standard techniques used to remove contamination and restore combat potential are:

- **Skin Decontamination**
- **Personal Wipedown**
- **Operator's Spraydown**
- **MOPP Gear Exchange**
- **Vehicle Washdown**
- **Detailed Troop Decontamination**
- **Detailed Equipment Decontamination**

The platoon would be involved in and should have knowledge of at least the first five techniques.

If chemical agents get on bare skin, you have an emergency. The best technique for removing or neutralizing this contamination is by using skin decontamination. This is a basic soldier survival skill and is performed using the M258A1 skin decontamination kit. Decontamination should begin within one minute to be most effective.

The personal wipedown technique removes or neutralizes contamination on the hood, mask, gloves, and personal weapon. Soldiers also use the M258A1 skin decontamination kit to perform personal wipedown.

M258A1 SKIN DECONTAMINATION KIT

CASE AND COVER

DECON 1 PACKET

DECON 2 PACKET

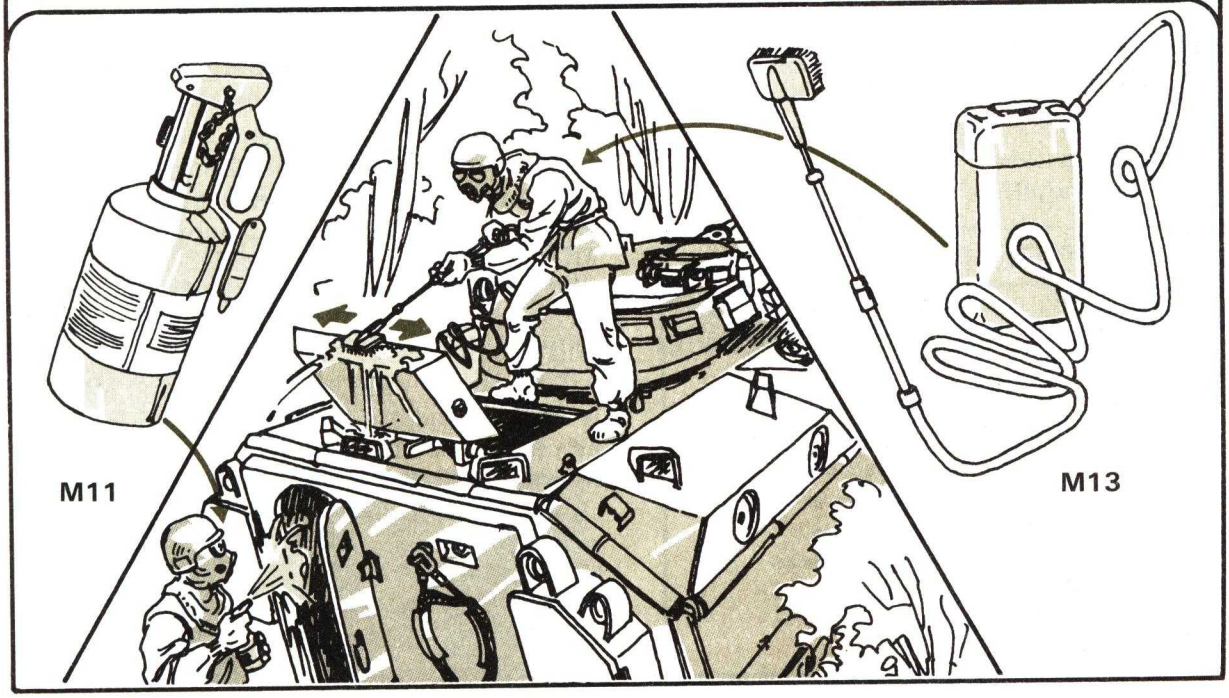
The steps that should be followed for individual decontamination are:

- **Obtain overhead cover.**
- **Flush contaminated eyes with water from canteen.**
- **Decontaminate skin with the M258A1 decontamination kit.**
- **Decontaminate individual equipment using the M258A1 decontamination kit.**

Personal wipedown should begin within 15 minutes of being contaminated.

The operator's spraydown technique should begin right after finishing personal wipedown. The spraydown removes or neutralizes contamination on surfaces that operators must frequently touch to do their mission. This can be done using the ABC-M11 or M13 portable decontamination apparatus which dispenses DS-2.

DECONTAMINATION APPARATUS



Each vehicle has one M11 decontamination apparatus that contains 1 1/3 quarts of DS-2 decontaminating agent and one can of DS-2 replacement fluid or one M13 decontamination apparatus which has a capacity of 14 liters of DS-2. These are located on the interior left front of the BFV, behind the driver. The M11 decontamination apparatus is used to decontaminate vehicle parts that must be touched to operate the vehicle. These areas include the driver's compartment and the turret controls. DS-2 must be removed by washing after 30 minutes contact time to prevent corrosive damage to the equipment. MOPP gear, level 4, must be worn when using DS-2.

The first three techniques above are categorized as basic skills decontamination techniques. The next two, MOPP gear exchange and vehicle washdown, are hasty decontamination techniques.

The MOPP gear exchange is conducted by the contaminated squad (occasionally platoon) and supported by the company supply section which provides decontaminants and new overgarments. When performing MOPP gear exchange, soldiers are paired into buddy teams. The teams are spaced around a circle, with 1 to 3 meters between each team. Refer to FM 3-5 for a detailed explanation.

MOPP GEAR EXCHANGE

STEP	ACTION
1	Gear drop
2	Hood decon
3	Overgarment off
4	Boots and gloves off
5	Overgarment on
6	Boots and gloves on
7	Secure hood
8	Secure gear

The vehicle washdown is supported by the battalion's power-driven decontamination equipment (PDDE) crew or a chemical company decontamination squad. The vehicle washdown greatly reduces the transfer hazard on equipment. Every vehicle is washed with hot soapy water for two to three minutes. Because speed is important and detection is difficult, vehicles are not checked for contamination after vehicle washdown is completed. Only gross contamination is removed. Refer to FM 3-5 for a detailed explanation.

The purpose of hasty decontamination is to sustain the combat potential of a contaminated force by limiting spread of the contamination. The benefits gained may allow temporary relief or MOPP reduction. Hasty decontamination should be done as soon as possible. A squad can do both of the techniques in about 45 to 60 minutes as it moves among the fighting position. These techniques should begin within six hours. The vehicle washdown is most effective if it is started within an hour of contamination.

Detailed troop and detailed equipment decontamination are classified as deliberate decontamination operations. Deliberate decontamination operations remove sufficient amounts of contamination to allow soldiers to safely operate the equipment at reduced MOPP levels for extended periods. It requires that the unit be taken out of battle; however, when it is finished decontaminating, the unit's combat power is restored. Generally, it will no longer need to operate in full MOPP level 4. Deliberate decontamination is done as part of an extensive reconstitution effort in brigade, division, and corps support areas. Ordinarily, the chemical unit selects a site, sets it up, and conducts the equipment decontamination with assistance from the contaminated unit. The troop decontamination is done by the contaminated unit with some technical assistance from the chemical unit.

Key weapon systems (TOW, 25-mm gun, and coaxial machine gun) are decontaminated by using DS-2, soapy water, or solvents. Ammunition is decontaminated by washing with soapy water, wiping with organic solvent, drying, and aerating.

Optical instruments, such as the integrated sight unit and starlight scopes, are decontaminated by using the M258A1 kit or blotting with rags, wiping with lens-cleaning solvent provided with the sight, and then allowing them to dry.

Communication equipment is decontaminated by airing, weathering, or hot air (if available). The metal parts of field telephones and radios are decontaminated with DS-2 and then wiped with rags.

Biological Decontamination. The BFV can be decontaminated by applying STB slurry. Leave it on 30 minutes, then remove by washing. (STB is provided to platoons by the company headquarters, which gets it from the battalion supply section.)

Wash

Wash with a detergent solution and rinse with a high-pressure water stream.

Steam Clean

Steam clean, using a detergent.

Weapons Decontamination. Weapons are decontaminated using household bleach solution, or soap and water. Working parts and surfaces should be dried and lubricated after decontamination. Contaminated clothing is disposed of by burning, burying, or decontaminated by laundering.

NOTE:

FM 3-5 contains detailed procedures for decontamination of men, equipment, and vehicles.

DECONTAMINATION TECHNIQUES

DECON TECHNIQUE	BEST* START TIME	DONE BY	TECHNIQUE	GAINS MADE
BASIC SKILLS	Before 1 minute	Individual	SKIN DECON	Stops agent from penetrating
	Within 15 minutes	Individual or crew	PERSONAL WIPEDOWN	
			OPERATOR'S SPRAYDOWN	
HASTY DECON OPERATION	Within 6 hours	Unit	MOPP GEAR EXCHANGE	Possible temporary relief from MOPP 4. Limit liquid agent spread
		Bn crew or decon squad	VEHICLE WASHDOWN	
DELIBERATE DECON OPERATION	When mission allows reconsti-tution	Unit	DETAILED TROOP DECON	Probable long-term MOPP reduction with minimum risks
		Decon platoon	DETAILED EQUIPMENT DECON	

NOTE:

*The techniques become increasingly less effective the longer they are delayed. Vehicle washdown is most effective if started within one hour but will often have to be delayed for logistical reasons.

APPENDIX N

Operations Security

SECTION I. COUNTERINTELLIGENCE

GENERAL

Counterintelligence measures are taken to prevent the enemy from detecting you by observation or electronic means. Camouflage and concealment and noise and light discipline are examples of counterintelligence.

CAMOUFLAGE AND CONCEALMENT

Camouflage is the use of natural and man-made materials to disguise and conceal troops, vehicles, and equipment so they blend with their surroundings. Concealment is the use of available terrain features, both natural and man-made, to hide troops, vehicles, and equipment. Camouflage and concealment make it more difficult for the enemy to detect and engage platoons and squads with accurate fire.

Camouflage can be attached to the BFV by communications wire or string. It should be used to break up the vehicle's outline, especially that of the turret. Camouflage on the turret must not interfere with the movement of the vehicle's weapons or block the view through the turret sights.

Natural camouflage may include branches, grass, mud, or snow. Man-made camouflage may include wire netting, carpets, boards, or poles. Both natural and man-made items may be used at the same time.

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When planning camouflage and concealment, platoons and squads must think about the things the enemy will look for, or things that will attract his attention to friendly positions. These include movement, shadows, obvious positions, shine or reflected light, shape, color, and concentration.

Movement. Movement attracts attention, particularly vehicular movement. Even slight movements, such as arm-and-hand signals or a soldier walking, may attract the enemy's attention.

Shadows. Unusual shadows will attract attention. Since the BFV is large and has a distinct shape, its shadow may be easily seen. Hence, every effort should be made to break up the vehicle's outline and cause its shadow to blend with shadows cast by natural terrain features. Shaded areas should be used to the maximum, but shadows move as the position of the sun or moon changes, and this should be taken into account. Vehicles should be repositioned accordingly.

Obvious Positions. Hilltops, road junctions, and lone buildings should be avoided. They may be easily seen by the enemy or serve as registration points for enemy indirect fire.

Shine or Reflected Light. In daylight, bright or shiny surfaces will reflect sunlight and draw the enemy's attention. At night, an exposed light, even one with a red lens, or the glow of a cigarette can be seen from far away.

Shape. The shape of a vehicle or even a helmet is easily identified by the enemy. Shape and outline of troops and vehicles must be broken up by camouflage materials.

Color. Combat uniforms and even the vehicle are colored to blend with wooded surroundings. Often, though, colors will not blend with the background. For example, if the ground is covered with snow, green

camouflage may not blend. Camouflage should be adjusted to fit local conditions.

Concentration. Congestion of troops or vehicles in a small area will attract the enemy's attention, and probably his fire. Men and vehicles must always be dispersed.

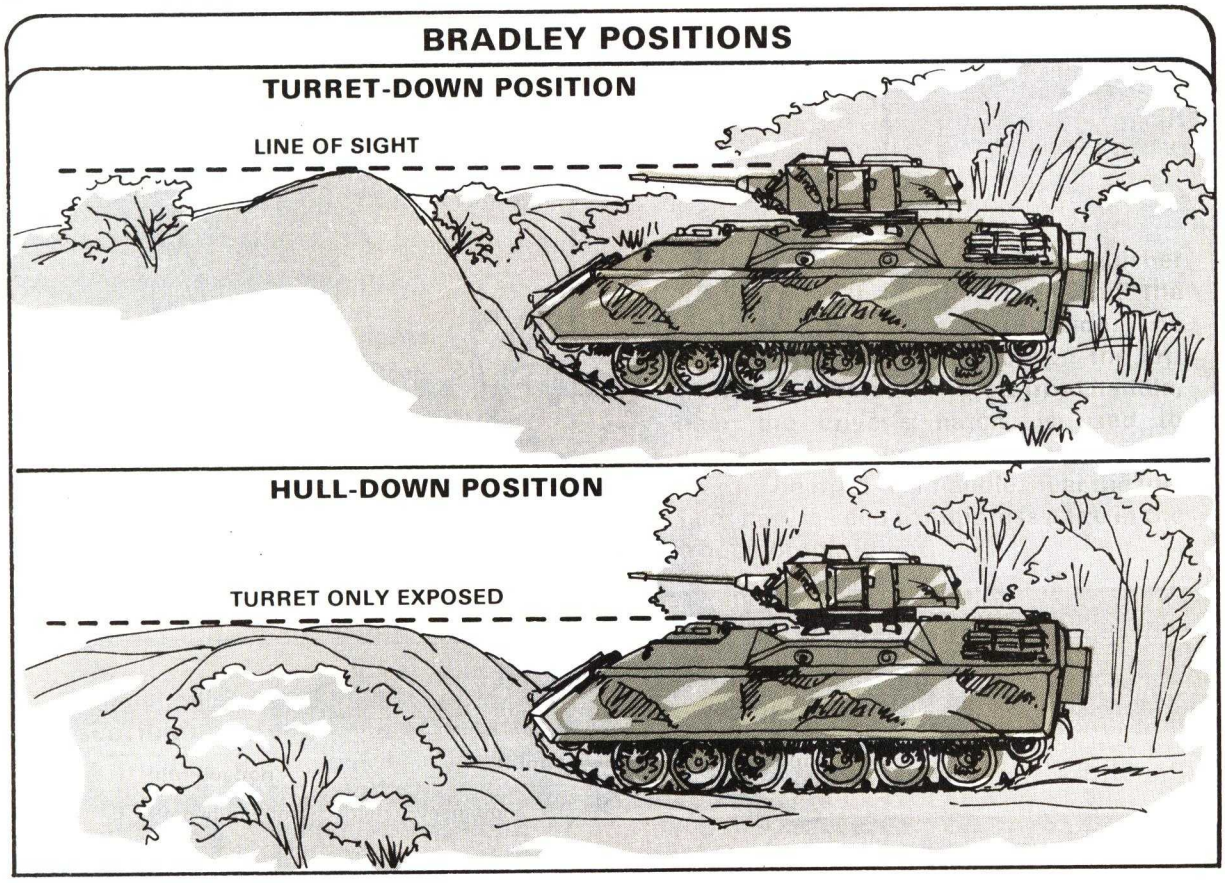
POSITIONS

Since the BFV is large, cover is often more important than camouflage. There are three main ways to conceal the vehicle: turret-down position, hull-down position, and hide position.

Turret-Down Position. In this position, most of the BFV is hidden from enemy ground observation by the terrain to the vehicle's front. Only the top of the turret is exposed so that the Bradley commander and gunner can observe the battlefield. The BFV must be moved from a turret-down position before its weapons can be used effectively.

Hull-Down Position. The most common position, the hull-down position, uses the terrain to protect the hull. This type of position allows the Bradley commander and gunner to observe the battlefield and use the turret weapons.

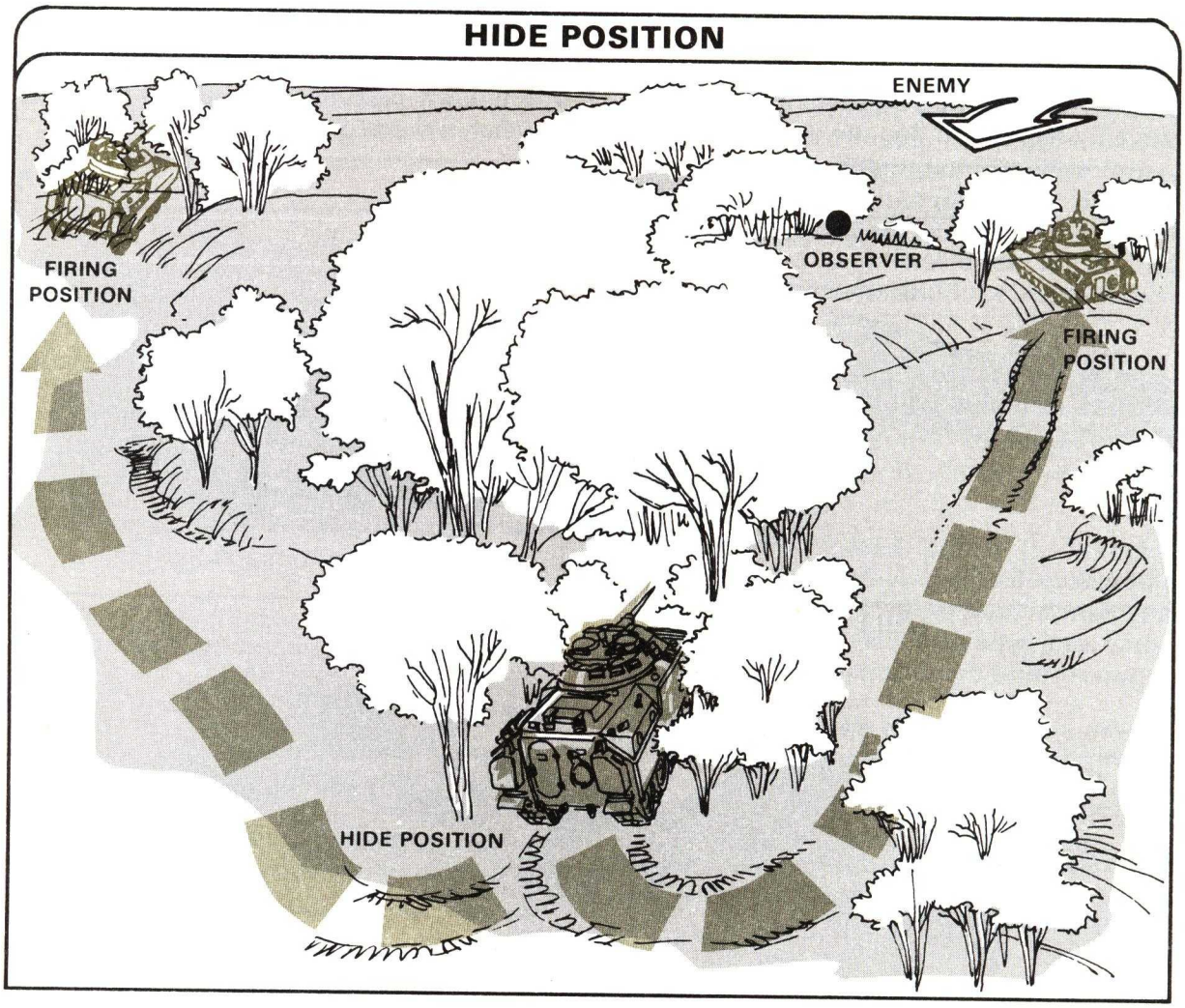
Hull-down positions are often found behind undulations, ridges, slopes, road and railroad embankments, and walls. The Bradley commander may choose to back into a hull-down position. This allows for rapid movement out of the position.



Hide Position. This type of position is used when likely firing positions have little or no cover and concealment. The vehicles are placed to the rear of their designated firing positions in a woodline, behind buildings, or in a depression.

When hide positions are used, the rifle teams should be forward to observe likely engagement areas. They should have a signal to alert the fighting vehicle crews to likely targets and a signal to call the vehicles forward at the appropriate time. These signals can be arm-and-hand, wire, or radio.

No matter what type of firing position is used, the vehicles should have more than one position. Once the BFV engages the enemy, it will attract return fire. By having other firing positions, a BFV can destroy a target, back down into cover, and move to another position. While this is being done, the other BFVs and the dismount element can be firing to divert the enemy's attention.



NOISE AND LIGHT DISCIPLINE

If a unit does not practice noise and light discipline at night, the best operational security measures can be wasted. The most difficult noises to control are noises made by the vehicle. These also are the most likely noises to be detected by the enemy. Several techniques can be used to cut down vehicle noises.

When possible, keep night movement to a minimum because the BFV's engine and tracks can be heard at a considerable distance. Avoid idling engines at extreme speeds or moving vehicle rapidly and, if possible, close ramps and hatches before dark. When closing them after dark, they should not be slammed shut.

Vehicle light discipline includes:

- **Using vision block covers during darkness.**
- **Using the driver's night vision viewer (AN/VVS-2).**
- **Using night vision goggles.**
- **Turning off all internal lights.**
- **Using red filters on flashlights.**
- **When it is dark and preparations have been made, one member of each dismount team should inspect the squad's vehicle from the outside to insure that there is no visible light being emitted from the vehicle.**

The dismount teams also must practice noise and light discipline. Noise discipline is simply avoiding loud noises, such as loud talking, laughing, or metal-on-metal sounds. Light discipline involves no smoking or building fires, and controlling use of flashlights.

SECTION II. PHYSICAL SECURITY

GENERAL

Physical security consists of actions platoons and squads take to insure the enemy does not close on or infiltrate friendly positions without being detected. These actions include manning observation posts, conducting patrols, conducting stand-to, silent watch, and providing local security.

OBSERVATION POST

Normally, a platoon is given the mission to set up and man at least one two-man OP. In turn, the platoon leader will designate a squad to perform OP duties. An OP is designed in the defense to observe to the front or in the gaps between friendly positions. It provides early warning of the enemy's advance. Wire is the primary means of communication between the platoon headquarters and the OP.

A whole squad, including its fighting vehicle crew, may be given an OP mission. This gives the OP more firepower, armor protection, and better mobility. When this is not feasible, the rifle team will man the OP.

When a platoon leader mans an OP, he must explain in detail what he wants the men to do, what actions they will take when they detect the enemy, and when and how they are to return to the platoon's position. The platoon leader may want to have the forward observer and his radiotelephone operator go with the squad personnel to call for indirect fire on any enemy detected.

PATROLS

Normally, patrols are conducted to cover unoccupied gaps between defensive positions. On occasion, patrols also may cover the terrain between OPs to the front. Squad rifle teams normally conduct patrols. (See chapter 7 for details on patrolling.)

STAND-TO

Platoons and squads will normally be required to conduct stand-to according to unit SOP. A stand-to is a period of maximum preparedness at first light in the morning and at darkness in the evening. This insures that the unit is ready for action and that every man adjusts to the changing light conditions. As a minimum, stand-to is conducted 30 minutes before and after beginning morning nautical twilight (BMNT) and end evening nautical twilight (EENT).

The unit SOP should specify the actions to be taken, but as a minimum they should include:

- **All troops are awake, dressed, and ready for combat.**
- **All vehicles are topped off with fuel and stocked with a basic load of ammunition.**
- **All weapons have been cleaned, serviced, assembled, and ready for action.**
- **All radios are turned on and tested (briefly).**
- **All vehicles are loaded to the extent possible, less the deployed dismount teams, and are ready for short-notice moves.**

SILENT WATCH

During limited visibility and during lulls in the battle, it is critical to keep up

observation of assigned sectors without exposing friendly positions to enemy view. While doing this, the platoon may use silent watch. Silent watch is a defensive posture that minimizes all sounds that might be detected by the enemy.

When employing silent watch, a key consideration is the power drain on the vehicle's electrical system. Since the engine must be shut off to reduce chance of detection, the platoon leader must carefully plan the silent watch. Adequate observation has to be maintained, yet a vehicle must be able to restart should the enemy attack; hence, the power system battery indicator should be carefully watched. Battery use without recharging varies depending on battery age and condition, temperature, etc.

How long a vehicle can stand silent watch before recharging can be extended by:

- **Elevating the TOW launcher and raising the ramp before turning the engine off.**
- **Manually traversing the turret and elevating or depressing the 25-mm gun or 7.62-mm coaxial machine gun.**
- **Using radio listening silence. (Use wire when time permits.)**
- **Using vehicular interior lights only when necessary.**

The platoon leader can extend platoon observation time without restart by developing a silent watch plan, choosing which vehicles will observe and for how long. If the entire platoon sector can be observed by each vehicle, then by using vehicles one at a time, the platoon's observation time can be maximized before restarting engines. If two vehicles are needed to cover the sector, then the observation can be rotated between pairs. When all BFVs have completed their period of silent watch and must recharge their batteries, the platoon leader should direct that all vehicles start their engines at the same time and run them at a fast idle. After the batteries are recharged, the silent watch rotation can begin again.

NOTE:

The thermal imagery sight of the integrated sight unit requires approximately 10 minutes to cool down enough to be fully effective. If enemy attack is imminent during limited visibility, all sights should be ON so they are ready. Since this drains power from the vehicle batteries, it limits the time the platoon can remain in silent watch. When silent watch is rotated within the platoon, watches should overlap 10 minutes to allow for the new team's sight to cool down.

LOCAL SECURITY

Local security consists of mounted and dismounted security.

Mounted Security. Mounted security is observing from the BFV and preparing the vehicle so that it does not become a security hazard.

The platoon leader should assign each squad an area to watch over. The Bradley commander and gunner can best do this

because they are elevated in the turret and have access to the BFV weapons' sights. In daylight, the optical sights and binoculars are used.

During the evening stand-to preparations, the following steps should be taken:

- **Adhere to noise and light discipline measures.**
- **Insure the 25-mm gun and 7.62-mm coaxial machine gun ammunition boxes are fully loaded.**
- **Activate and test the turret drive and turret stabilization.**
- **Activate and test the integrated sight unit in the thermal mode.**
- **Run the vehicle's engine enough to insure the batteries are charged; thus, when the platoon assumes silent watch, all vehicles will be ready.**

Dismounted Security. Dismounted local security is provided by the rifle teams. During daylight, this involves observing in assigned sectors of defensive fires. At night, positions may be moved forward or closer to the vehicle element or to tanks in a company team.

The infantrymen provide security by observing assigned sectors with the naked eye, with binoculars, and with their night-sights. They also listen for the enemy. Tank crews and BFV crews have difficulty listening for the enemy because of vehicle noises and the crews' confined place in the vehicles.

SECTION III. SIGNAL SECURITY

GENERAL

Signal security (SIGSEC) includes measures taken to deny or counter enemy exploitation of electronic emissions. It includes communications security and electronic security.

At the platoon and squad level, SIGSEC mainly concerns good communication procedures and electronic counter-countermeasures. ECCM are those actions taken to insure friendly use of the electromagnetic spectrum against electronic warfare and includes antijamming, authentication, and radio discipline. (See Appendix D for communications security details.)

As far as possible, the radio should be considered a communications backup. Arm-and-hand signals, flag signals, whistles,

telephones, flashlight signals, and messengers are other available means.

There will be times when the radio must be used. Platoons and squads should assume that the enemy is monitoring every radio transmission and using radio direction finders to locate transmitting radios. They also must assume that the enemy understands English and can quickly break unauthorized codes.

No matter who is transmitting by radio, these rules should be followed:

- **Transmit only when necessary.**
- **Think the message through and know exactly what needs to be said before keying the transmitter.**
- **Keep transmissions short, and use call signs only as necessary.**
- **Do not confuse the radio with vehicle intercom systems.**
- **Use proper radiotelephone procedures and prowords.**
- **Operate radios on low power as much as possible.**

ENCODED INFORMATION

In transmissions to the company commander and other platoons, the platoon leader often will have information that needs to be encoded. In these situations, the platoon leader should use the communications-electronics operating instructions for the proper encoding procedures and authentication tables.

Within the platoon, there seldom is occasion to send information that requires code; hence, transmissions are in the clear. Sensitive information should be passed orally in a face-to-face meeting of leaders or sent by messenger.

SECTION IV. INFORMATION SECURITY

GENERAL

Information security includes measures taken to prevent the enemy from gaining intelligence about friendly units, intentions, or locations. Information security can be associated with physical security in that physical security may be necessary to good information security.

SECURITY MEASURES

During combat operations, foreign nationals and observers should not be permitted in the unit's area. Specific instructions should be given to platoon members to deny local civilians access into or around their positions. Civilians could be used by the enemy to obtain information about the unit.

Weapons, ammunition, classified documents, and sensitive items should be safeguarded at all times. When not in use, sensitive items should be stored out of sight. Careless equipment security can lead to compromise of unit capabilities and limitations. If, for example, unit movement is through a seemingly secure town, and with limited visibility devices and ammunition "displayed," enemy infiltrators or sympathizers may obtain information about unit capabilities.

Unit vehicle markings and individual unit patches should be covered. These items may seem insignificant, but they may provide valuable information to the enemy. They allow the enemy to determine the size and type of unit that opposes them and the unit's capabilities.

Censorship is practiced in wartime. Personal mail is inspected to avoid disclosure of valuable information. Soldiers should be briefed on what not to include in their mail. Mail can be a valuable intelligence source. Examples of items that should not be in letters include:

- **Unit identification, size, location, or capabilities.**
- **Knowledge of future operations.**
- **Specific mention of commanders' names.**
- **Acknowledgement of heavy losses or poor morale.**

Whenever a unit departs a position, a thorough police of the area should be conducted to insure that no item of intelligence value is left behind. In a laager position, ammunition containers should not be left behind since they could provide information as to the types and numbers of systems that a unit has. Food containers could be a dead giveaway as to the unit's size. Discarded radio batteries can disclose communications capabilities. It is essential that unit members police as they go, to avoid possible compromise.

APPENDIX O

Obstacles

SECTION I. MINEFIELDS

GENERAL

Mines can be one of the most effective tank and personnel killers on the battlefield when properly employed, especially in the close-in battle. Mines not only have the capability to obstruct the enemy but also to destroy him. Mines are especially useful when combined with direct and indirect fires.

Minefields assist in security, and in defensive, retrograde, and offensive operations, by reducing the mobility of the enemy. Minefields supplement obstacles and weapons. They also add to the user's combat power.

HASTY PROTECTIVE MINEFIELD

In the defense, platoons and squads lay hasty protective minefields to supplement weapons, prevent surprise, and give early warning of enemy advance. A platoon can install hasty protective minefields, but only with permission from the company commander.

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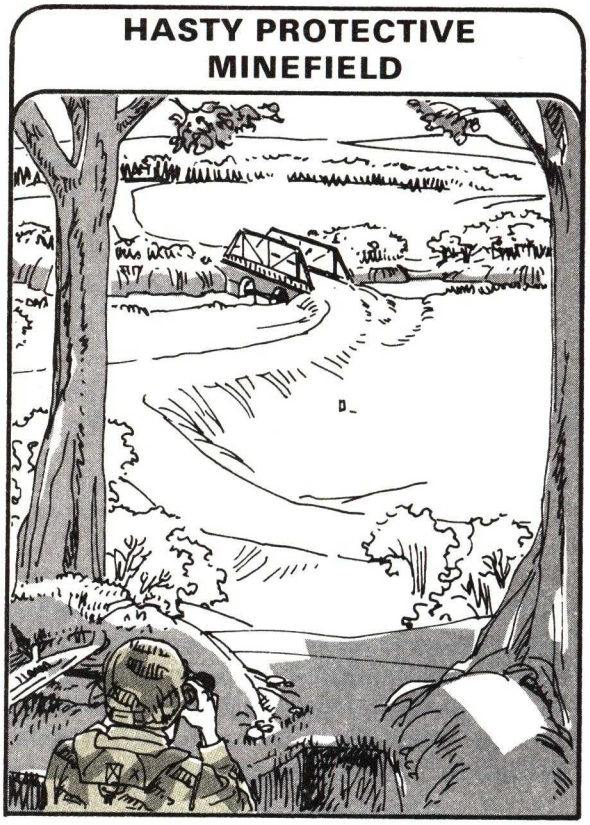
Hasty protective minefields are reported to the company commander and recorded on DA Form 1355-1-R. The leader puts the minefield across likely avenues of approach, within range of his organic weapons, and covered by the fire of his organic weapons. Mines are normally placed on the surface in this type of minefield.



The minefield should be recorded before the mines are armed. The leader installing the minefield should warn adjacent platoons and tell the company commander of the minefield's location. When the platoon leaves the area (except when forced to withdraw by the enemy), it must remove the minefield or transfer the responsibility for the minefield to the relieving platoon leader.

Only metallic mines are used in hasty protective minefields. If the mines cannot be

found, a metallic mine detector will help locate them. The mine detectors are in the battalion's supply section. Booby traps are not used in hasty protective minefields; they delay removal of the mines.

The employing unit must make sure that the minefield can be kept under observation and covered by fire at all times. Continuous observation should keep the enemy from booby trapping, removing, or easily bypassing the mines.

The following example describes how to lay a hasty protective minefield. Although this is an example for a platoon, a squad follows the same procedure.

The first platoon has moved into a defensive battle position. Hasty protective minefields are needed to improve the defense. The platoon's basic load contains M21 antitank mines, and M16A1 and M18A1 (Claymore) antipersonnel mines with tripwires.

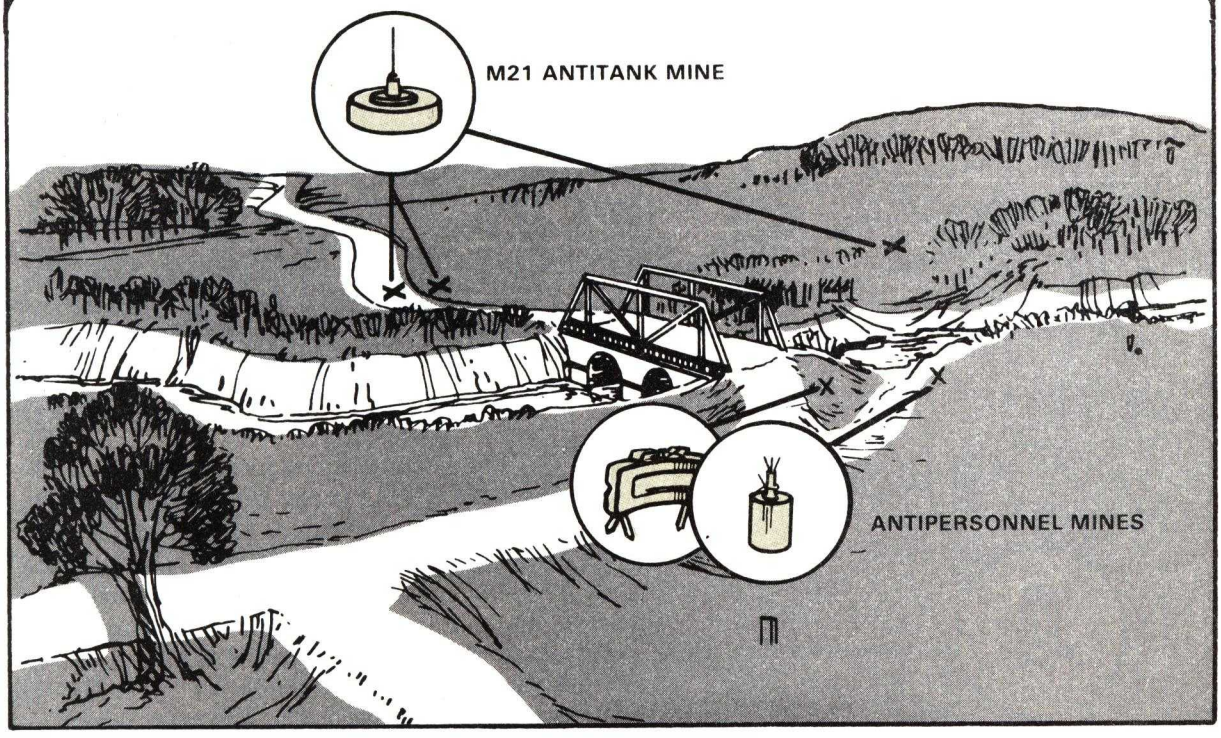
After requesting and receiving permission to lay the minefield, the platoon leader and squad leaders reconnoiter to determine exactly where the mines should be placed.

The leaders find a need to use antitank mines to block enemy vehicles at two points — the bridge and the ford.

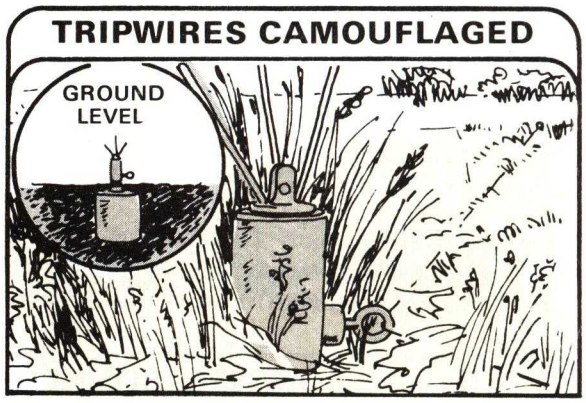
NOTE:

To lay a hasty minefield, a squad follows the same procedure as the platoon.

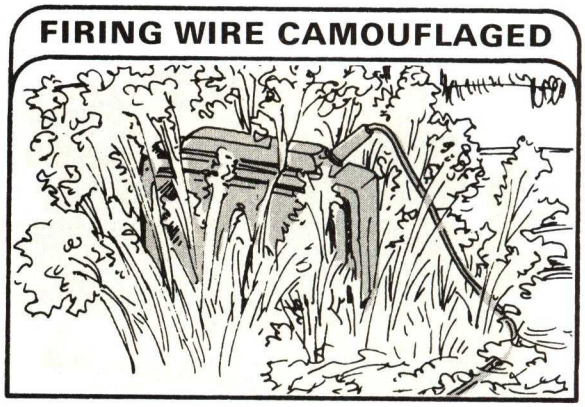
ANTIPERSONNEL AND ANTITANK MINES IN A HASTY PROTECTIVE MINEFIELD



The leaders decide that antipersonnel mines are needed to protect the antitank mines and to cover the likely avenues of approach of enemy infantry. Antipersonnel mines are also needed for the open area in front of the platoon. The M16A1 antipersonnel mines may be buried and the tripwires camouflaged with grass or leaves though mines are generally placed on the surface.



The firing wire for the Claymore will be camouflaged using grass or leaves.



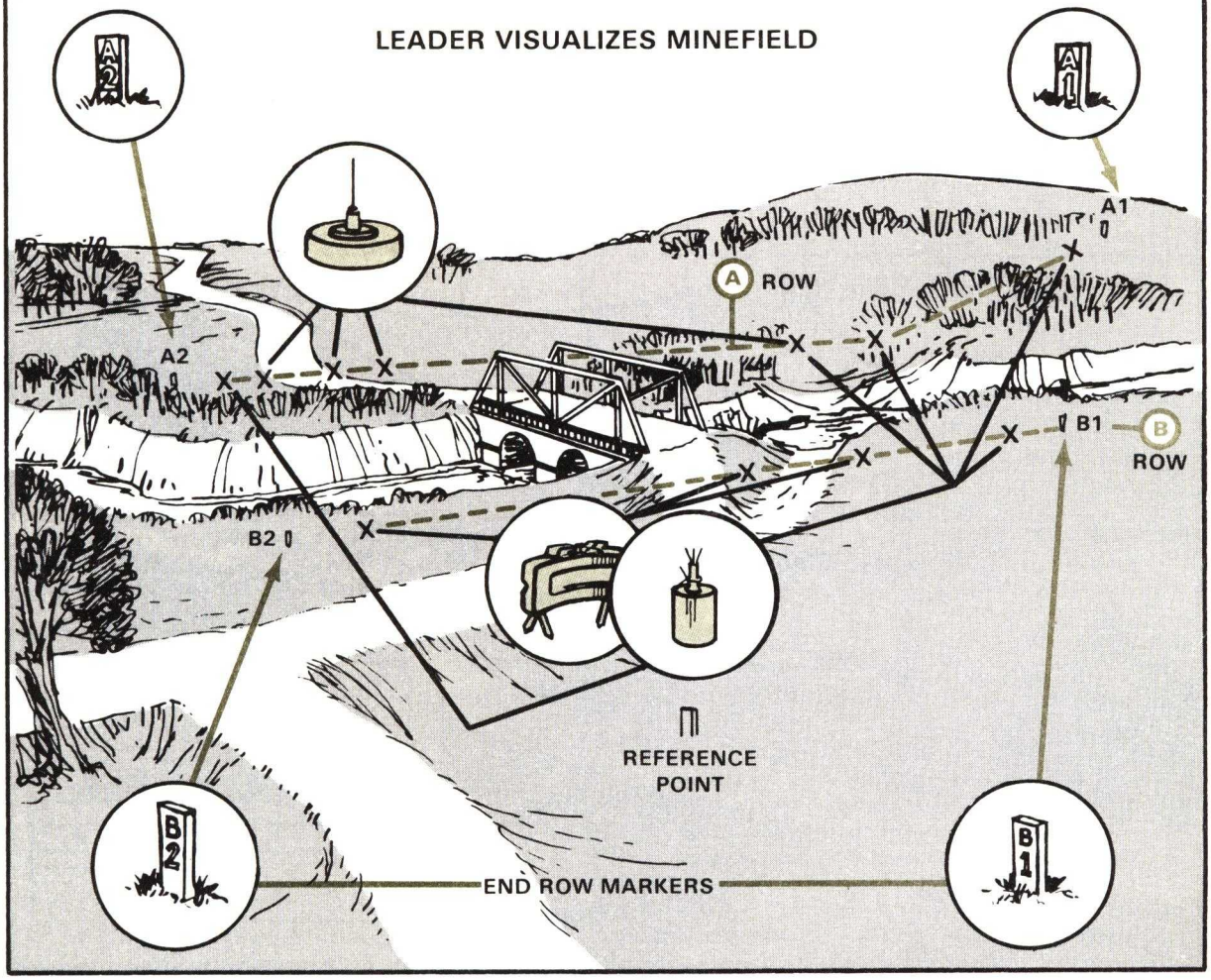
When the leaders have decided exactly where they will lay the mines, and are ready to begin, the platoon leader reports this information to the company commander. This is called an initiation report. Next, squad leaders have their men emplace the mines. **THE TROOPS DO NOT ARM OR ATTACH TRIPWIRES TO THE MINES AT THIS TIME.**

While the troops are placing the mines, the platoon leader finds an easily identifiable reference point in front of the platoon's position. He decides the concrete post to the front is an ideal reference point. The platoon leader now starts to record the minefield.

At the reference point, the platoon leader visualizes the minefield, running in rows parallel to the defensive position, which makes recording simpler and retrieval quicker and safer. The row of mines closest to the enemy is designated A and the succeeding rows will be B, C, etc. For this hasty protective minefield, the platoon leader decides that two rows (A and B) will be enough.

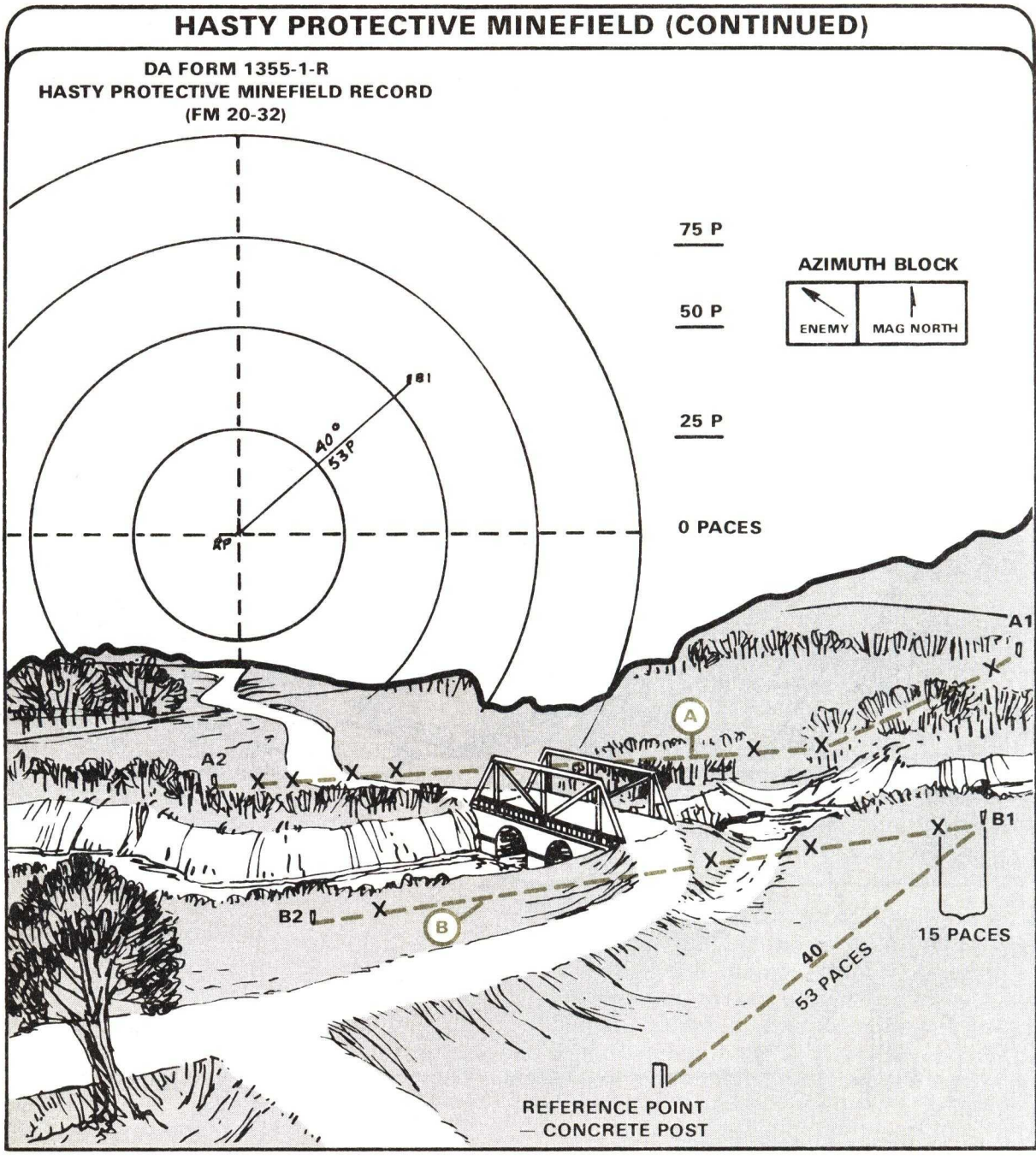
The ends of a row are shown by two markers. They are labeled with the letter of the row and the number 1 for the right end of the row and number 2 for the left end of the row. The rows are numbered from right to left, facing the enemy. The marker can be a steel picket or wooden stake with a nail or can attached so that it can be found with a metallic mine detector.

HASTY PROTECTIVE MINEFIELD



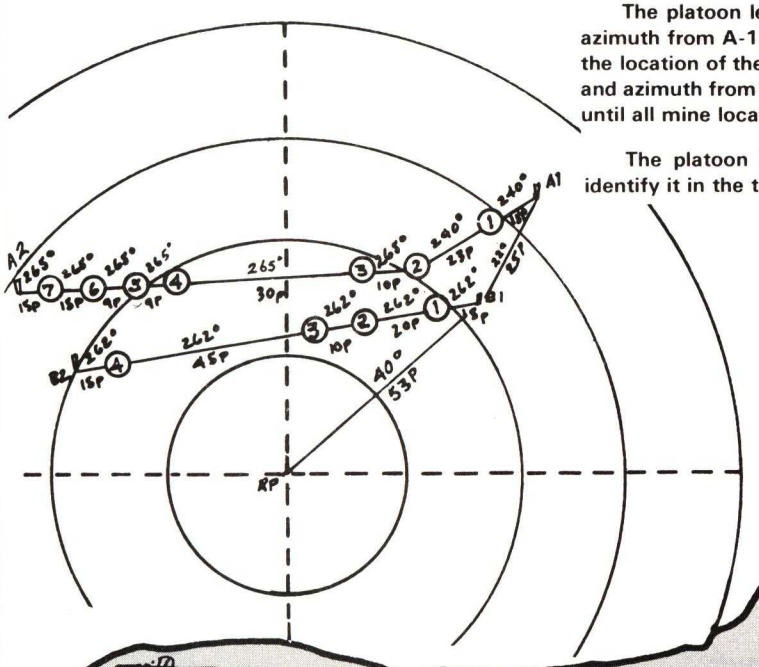
From the concrete post, the platoon leader measures the magnetic azimuth in degrees and paces the distance to a point arbitrarily selected between 15 and 25 paces to the right of the first mine on the friendly side of the minefield. This point, B-1, marks the beginning of the second row. The platoon leader places a marker at B-1 and records the azimuth and distance from the concrete post to B-1 on DA Form 1355-1-R.

HASTY PROTECTIVE MINEFIELD (CONTINUED)



HASTY PROTECTIVE MINEFIELD (CONTINUED)

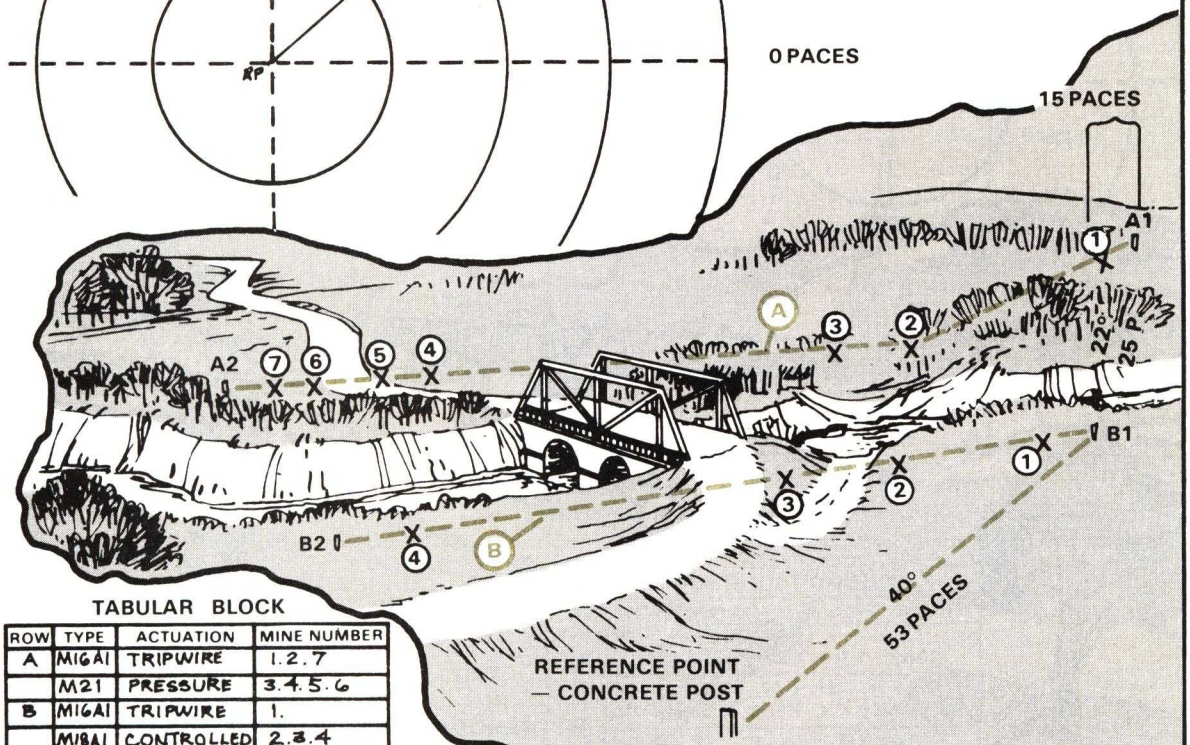
DA FORM 1355-1-R
HASTY PROTECTIVE MINEFIELD RECORD
(FM 20-32)



Next, from B-1 the platoon leader measures the azimuth and distance to a point 15 to 25 paces from the first mine in row A. He places a marker at this point and records it as A-1.

The platoon leader then measures the distance and azimuth from A-1 to the first mine in row A and records the location of the mine. He then measures the distance and azimuth from the first mine to the second, and so on until all mine locations have been recorded as shown.

The platoon leader gives each mine a number to identify it in the tabular block of DA Form 1355-1-R.



TABULAR BLOCK

ROW	TYPE	ACTUATION	MINE NUMBER
A	M16A1	TRIPWIRE	1.2.7
	M21	PRESSURE	3.4.5.6
B	M16A1	TRIPWIRE	1.
	M18A1	CONTROLLED	2.3.4

REMARKS

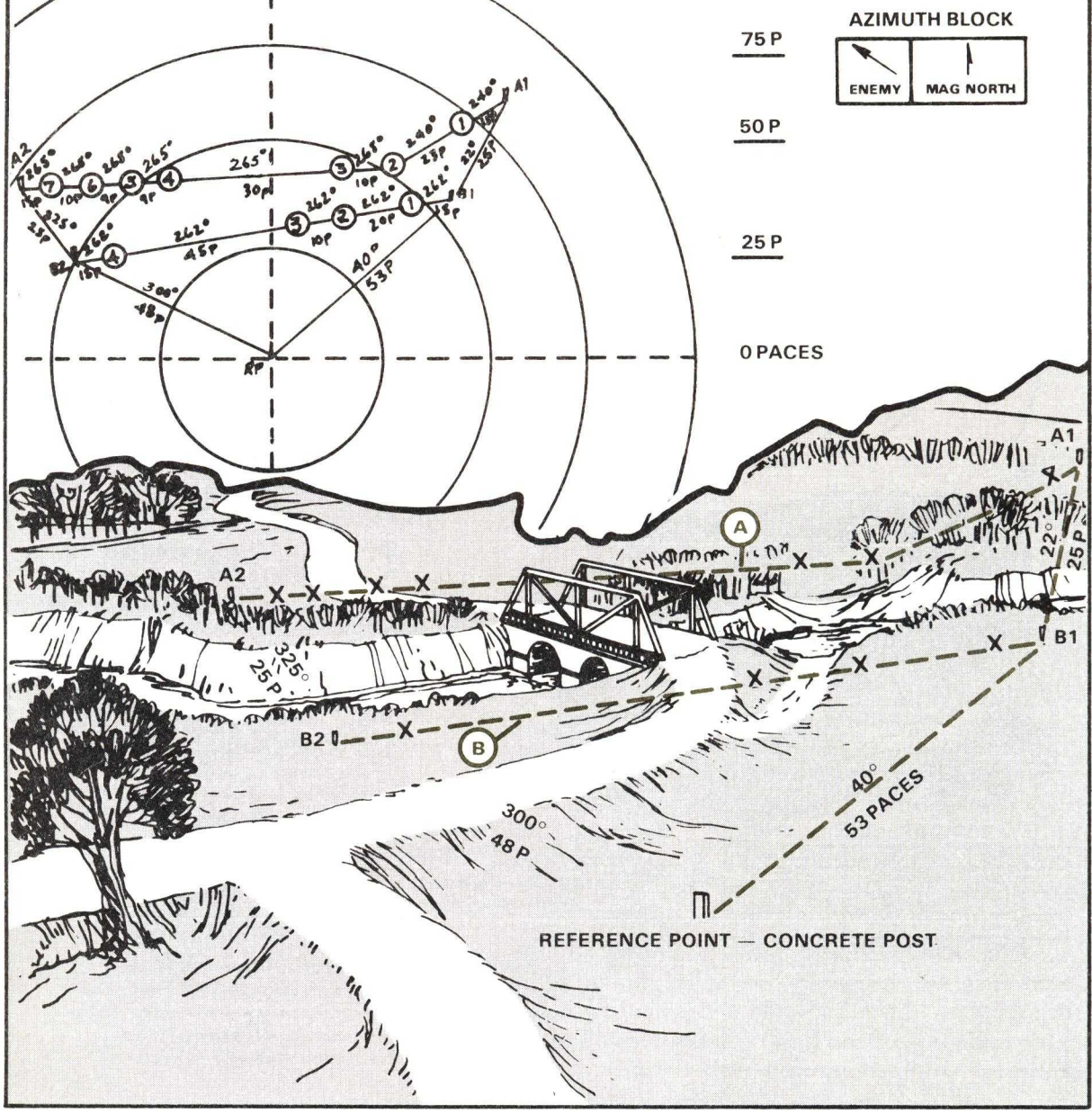
DA FORM 1355-1-R, 1 JULY 75

When the last mine location in row A is recorded, the platoon leader measures an azimuth and distance from the last mine to another arbitrary point between 15 and 25 paces beyond the last mine. He places a marker here and calls it A-2. The platoon leader follows this same procedure with row B.

HASTY PROTECTIVE MINEFIELD (CONTINUED)

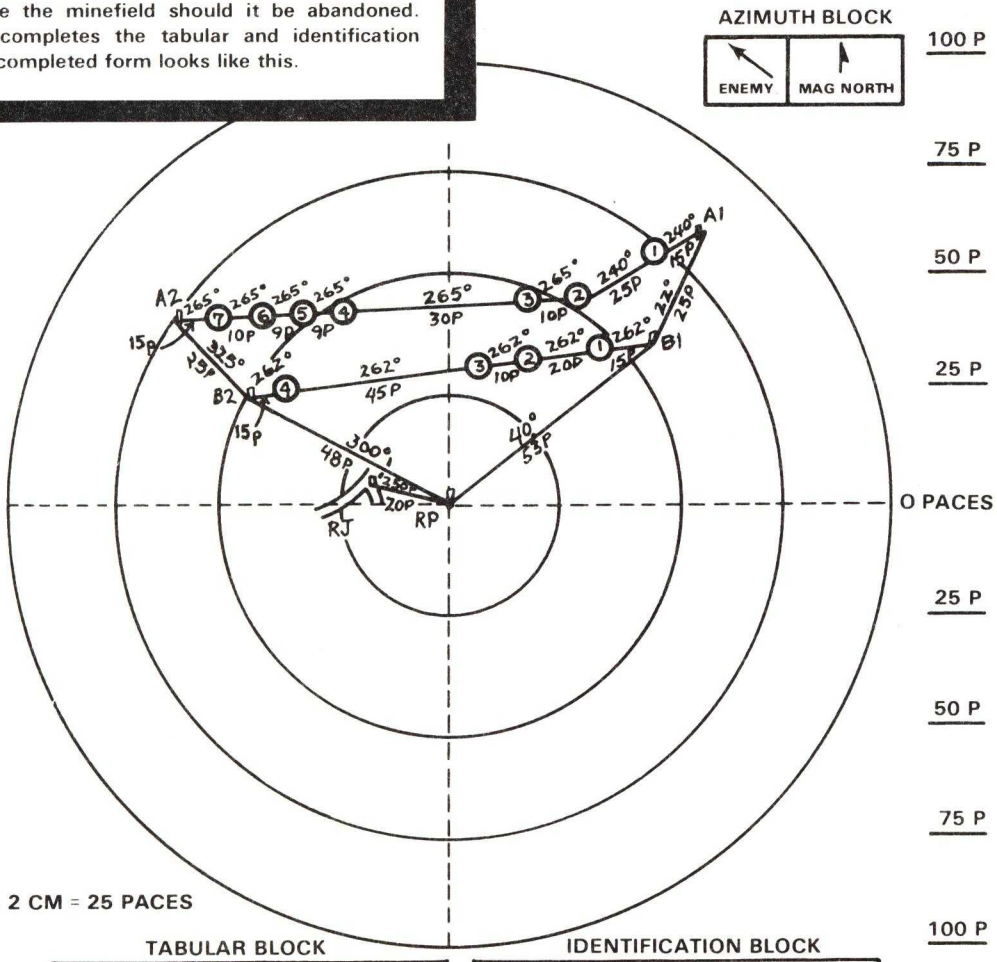
DA FORM 1355-1-R
HASTY PROTECTIVE MINEFIELD RECORD
(FM 20-32)

When the platoon leader finishes recording and marking the rows, he measures the distance and azimuth from the reference point to B-2, and from B-2 to A-2, and records them. If AT mines are being used, it is recommended that they be used as the A-2/B-2 markers because their larger size will facilitate retrieval. The form now looks like this.



HASTY PROTECTIVE MINEFIELD (CONTINUED)

The platoon leader now ties in the reference point with a permanent landmark that he found on the map. He measures the distance and azimuth from this landmark to the reference point. The landmark might be used to help others locate the minefield should it be abandoned. Finally, he completes the tabular and identification blocks. The completed form looks like this.



SCALE. 2 CM = 25 PACES

TABULAR BLOCK

ROW	TYPE	ACTUATION	MINE NUMBER
A	M16A1	TRIP WIRE	1.7.7.
	M21	PRESSURE	3.4.5.6.
B	M16A1	TRIP WIRE	1
	M18A1	CONTROLLED	2.3.4.
REMARKS	LAND MARK IS ROAD JUNCTION AT NA 12343409		

IDENTIFICATION BLOCK

UNIT 2ND PLT, A CO 1-4TH 1ST INF DIV	
REF PT CONCRETE POST BY ROAD	
REMARKS POINTS A1 + A2, B1 & B2 ARE MARKED WITH 2"x 2" STAKES	
MAP & SHEET NO TALBOT 5568	
NAME OF OIC LT. ALLAN	
Signature Lt Allan	Hour & Date 1700 8 JAN 79
MINES REMOVED	
MINES TRANSFERRED	

DA FORM 1355-1-R, 1 JULY 75, REPLACES DA FORM 1335-7, 1 MAR 68, WHICH IS OBSOLETE.

While the platoon leader is tying in the landmark, the troops arm the mines. The troops arm the mines nearest the enemy first (row A). This lets the troops work their way back to the platoon position safely.

With the field laid and the paperwork done, the platoon leader reports that the minefield is completed.

As long as the unit and the minefield stay in place, the form (DA Form 1355-1-R) stays with the platoon leader. If the minefield is transferred to another platoon, the gaining platoon leader signs and dates the "mines transferred" block and accepts the form from the previous platoon leader. When the minefield is removed, the form is destroyed. If the minefield is left unattended or abandoned unexpectedly, the form must be forwarded to the company commander. The company commander forwards it to battalion to be transferred to more permanent records.

In summary, the steps for installing a hasty protective minefield are:

1. Report intention to lay a hasty protective minefield and get authorization to lay it.
2. Reconnoiter to find the best places for mines based on likely enemy avenues of approach and the platoon's ability to keep the mines under observation.
3. Report initiation of the minefield.
4. Have the mines placed on the avenues of approach. Do not arm the mines yet. Use only metallic mines. Do not use booby traps.
5. Record the minefield on DA Form 1355-1-R.
6. Arm the mines, working from the enemy side to the friendly side.
7. Report completion of the minefield.
8. Always integrate these mines with the other defense plans and cover a hasty minefield with the fire of your organic weapons.

Remember, when filling out DA Form 1355-1-R:

1. Magnetic North is already printed on the form. Orient the form accordingly.
2. Always draw "enemy" arrow pointing TOWARD enemy.
3. To determine the scale, measure from the reference point to the mine or row marker stake farthest away and divide by four.
4. Landmark description and azimuth goes in the tabular block of the remarks section.
5. The remarks section, under the identification block, should describe the row markers and tell where the safety pins and clips for the mines are being kept. This is so someone can find them when they take up the minefield.

When retrieving the mines, the troops start at the reference point and move to B-1, using the azimuth and distances as recorded. They then move from B-1 to the first mine in row B. However, if B-1 is destroyed, they move from the reference point to B-2 using that azimuth and distance. They will now have to shoot the back azimuth from B-2 to the last mine. (Add or subtract 180 degrees from the recorded azimuth.) The stakes at A-1, B-1, A-2, and B-2 are necessary because it is safer to find a stake when traversing long distances than to find a live mine.

SECTION II. WIRE AND DEMOLITIONS

GENERAL

Engineers normally have the responsibility and equipment for constructing wire and demolition obstacles. The shortage of engineers, however, may require that rifle platoons and squads build these obstacles.

All reinforcing obstacles (wire, demolition, and mines) should be:

- **Integrated with observed fires (covered by fire).**
- **Integrated with the maneuver scheme.**
- **Integrated with existing obstacles.**
- **Employed in depth.**
- **Employed for surprise (irregular pattern, concealed).**

TRIPLE STANDARD CONCERTINA FENCE

The most common wire barrier a platoon or squad may build is the triple standard concertina fence. It is built of either barbed wire concertina or barbed tape concertina. There is no difference in building methods.

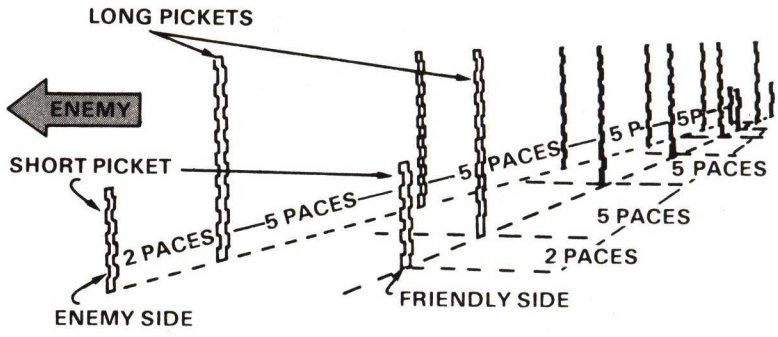
The material and labor requirements for a 300-meter triple standard concertina fence are listed below.

long pickets	160
short pickets	4
400-meter reels of barbed wire	3
rolls of concertina	59
staples	317
man-hours to erect	30

CONCERTINA FENCE

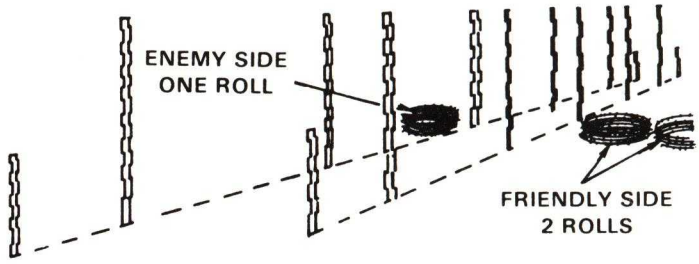
1

To construct a triple standard concertina fence, first lay out and install all pickets from left to right (as you face the enemy). Put the long pickets five paces apart, and the short (anchor) pickets two paces from the end of the long pickets. The enemy and friendly picket rows are offset and are placed 3 feet apart.



2

Now lay out all rolls of concertina. Place a roll in front of the third picket on the enemy side, and two rolls to the rear of the third picket on the friendly side. This step is repeated for every fourth picket thereafter.



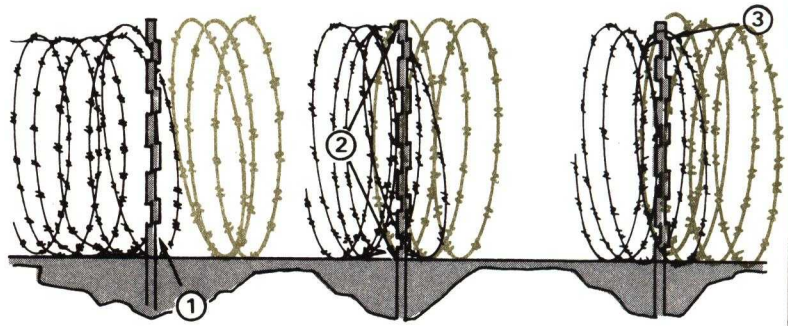
3

Install the front row concertina and horizontal wire. Place the concertina over the pickets as shown in the illustration.

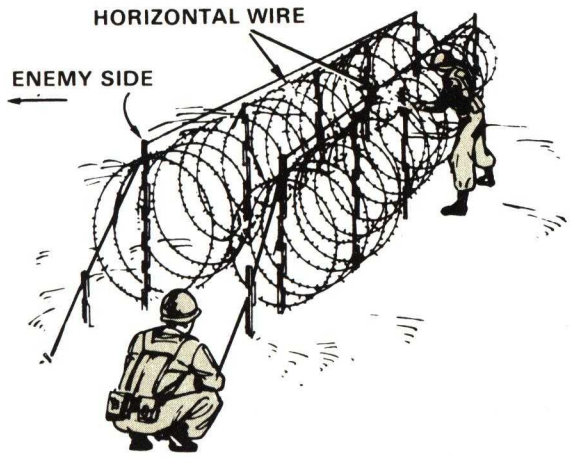
① PLACE BOTTOM PORTION OF FIRST COIL OVER PICKET.

② PLACE BOTH BOTTOM AND TOP PORTION OF SECOND COIL OVER PICKET.

③ PLACE TOP PORTION OF FIRST COIL OVER PICKET.

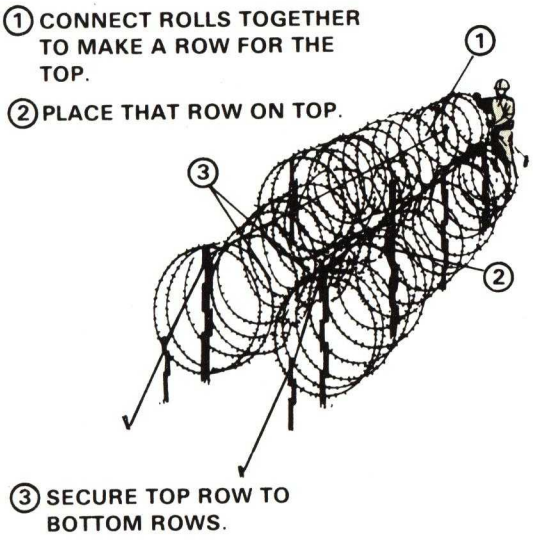


CONCERTINA FENCE (CONTINUED)



4

Install the rear row of concertina and horizontal wire as shown in the illustration.



5

Install the top row of concertina and join the rear horizontal wire as shown in the illustration.

DEMOLITION

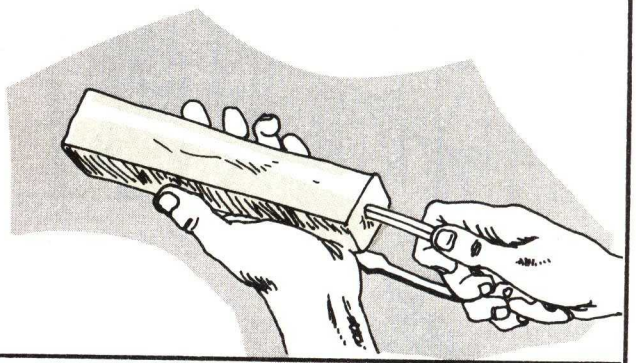
The platoon or squad may also perform demolition work. Basic to this is proper preparation of a charge. There are two basic ways to detonate an explosive charge: nonelectric and electric. (A combination of these two basic ways may also be used.) All charges should be dual-primed to reduce the possibility of a misfire. Dual-priming consists of two complete firing systems independent of the other, and each capable of firing the same charge. Dual-priming can consist of two electric systems, two nonelectric systems, or a combination. (For more information, see FM 5-25.)

NONELECTRIC DEMOLITIONS SYSTEM

In the nonelectric demolition system, troops must follow several steps.

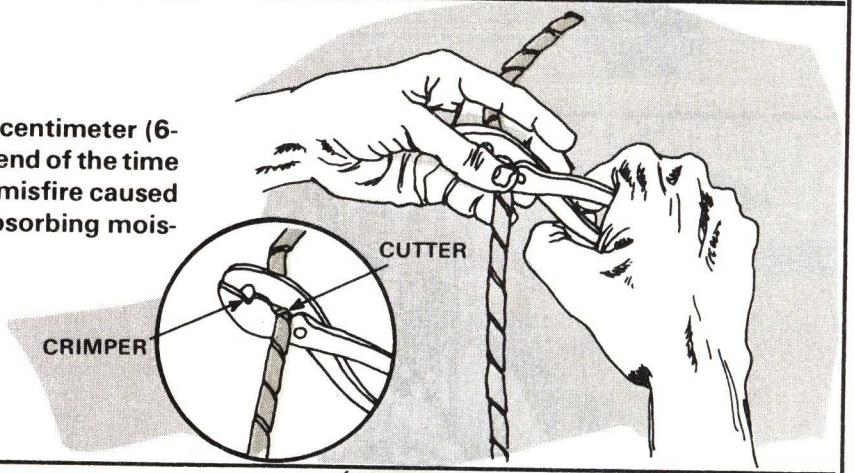
STEP 1
Prepare Block of Explosive

Clear the cap well of a block of TNT or push a hole about the size of a blasting cap (3 centimeters [1 1/3 inches] deep and .65 centimeter [1/4 inch] in diameter) in a block of C4 plastic explosive.



STEP 2
Cut Fuse

Cut and discard a 15-centimeter (6-inch) length from the free end of the time blasting fuse to prevent a misfire caused by the exposed powder absorbing moisture from the air.



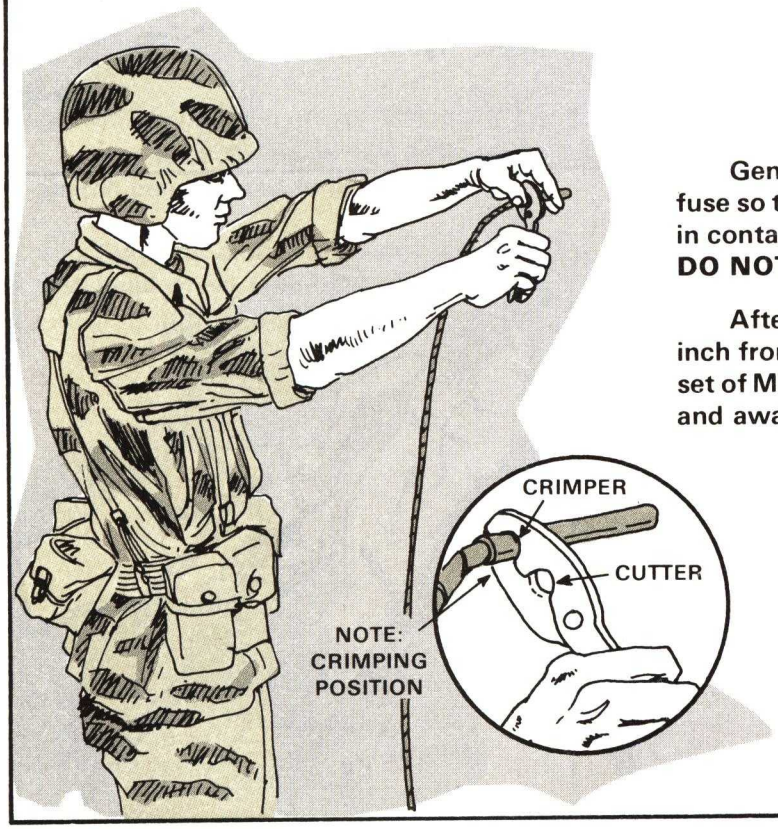
STEP 3
Compute Burning Time

Compute the burning time of a 91.4-centimeter (3-foot) section of fuse to help determine how much fuse is needed to allow the person detonating the charge to reach a safe distance from the explosion. Divide this burning time by 3 to find the burning time of 30.5 centimeters (1 foot). Now divide the time required to allow the person detonating the charge to reach a safe distance from the explosion by the burn time of 30.5 centimeters (1 foot). This will give the number of centimeters (feet) of fuse needed.

NONELECTRIC DEMOLITIONS SYSTEM (CONTINUED)

STEP 4
Inspect Cap

Inspect the nonelectric blasting cap to insure it is clear of foreign matter.



STEP 5
Seat and Crimp Cap

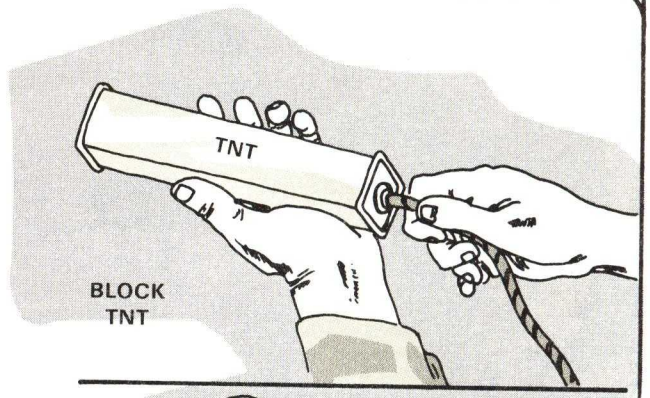
Gently slip the blasting cap over the fuse so that the flash charge in the cap is in contact with the end of the time fuse. **DO NOT FORCE IT IN THE CAP.**

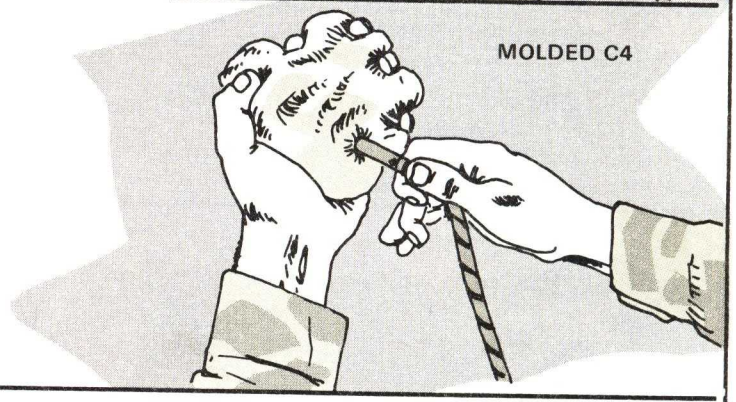
After seating the cap, crimp it 1/8 inch from the open end of the cap with a set of M2 cap crimpers. Point the cap out and away from you when crimping.

NONELECTRIC DEMOLITIONS SYSTEM (CONTINUED)

STEP 6
Insert Cap

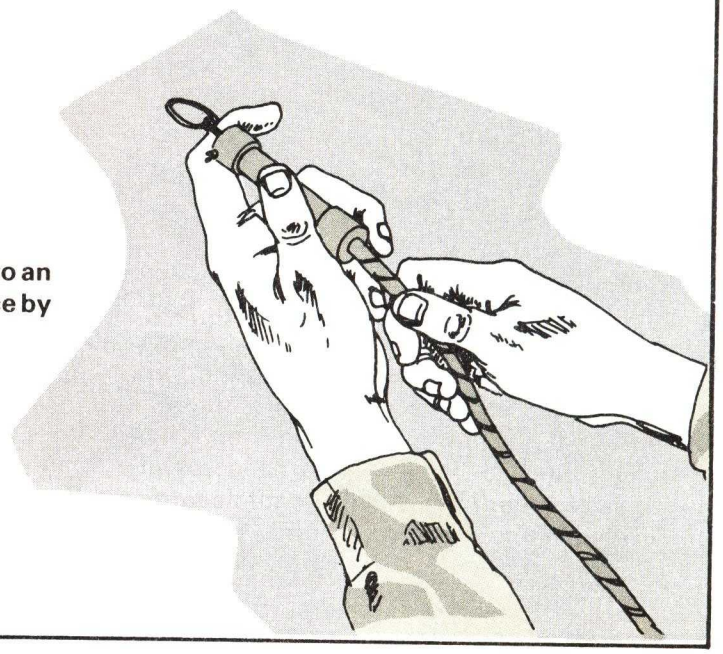
When using TNT, insert the blasting cap into the cap well and secure with the priming adapter or tape. When using C4, place the cap into the hole you made in the C4 and mold the C4 around the cap.





STEP 7
Insert Fuse

Insert the free end of the fuse into an M60 fuse igniter and secure it in place by tightening the fuse holder cap.



NONELECTRIC DEMOLITIONS SYSTEM (CONTINUED)

STEP 8
Ignite Fuse

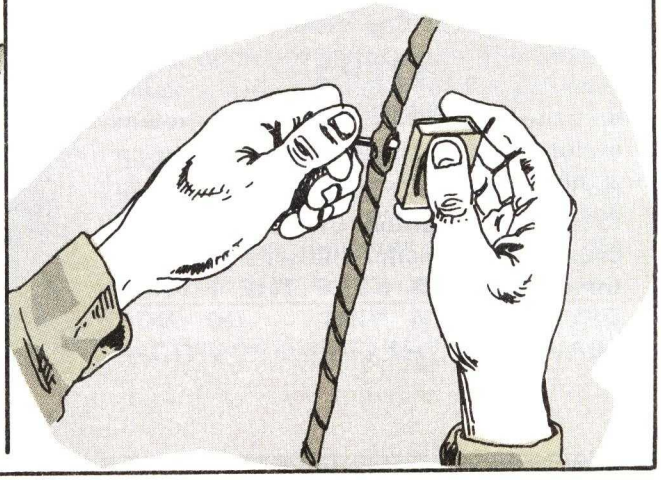
To fire, remove the safety pin, hold the barrel in one hand, and pull on the pull ring with the other, taking up the slack before making the final strong pull. If the fuse igniter misfires, reset it by pushing the plunger all the way in and trying to fire as before. If it still misfires, replace it.

If a fuse igniter is not available, a match can be used to light the fuse.

Split the end of the fuse and place the head of an unlighted match in the split (make sure the match head is touching the powder train), and then light the inserted match head with another flaming match or by striking the inserted match head on a match box.

INSERTING MATCH INTO FUSE

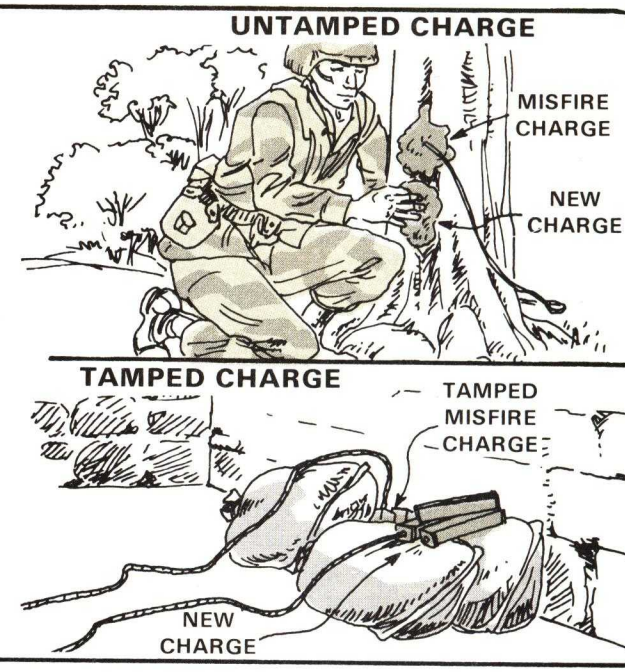
LIGHTING MATCHHEAD



NONELECTRIC DEMOLITIONS SYSTEM (CONTINUED)

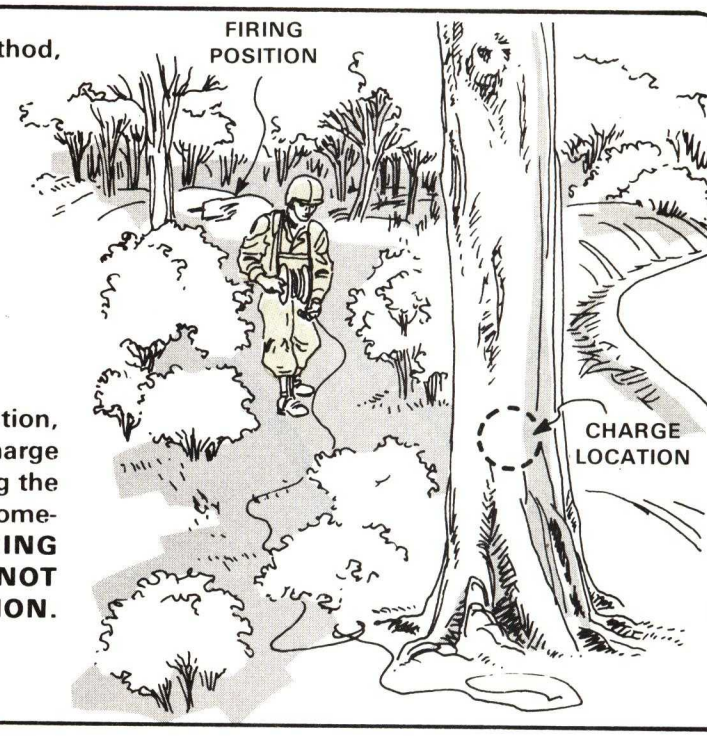
STEP 9
Misfire

If the fuse burns but the explosive charge does not go off, there is a misfire. When this happens, wait 30 minutes before attempting to clear it. If the misfire charge was not tamped (nothing packed around it), lay a primed charge of at least one block of C4 or TNT beside it. If it was tamped, place at least two blocks of C4 or TNT beside it after carefully digging to within one foot of the charge. Do not move the misfire charge. The detonation of the new charge will detonate the misfire charge.



ELECTRIC DEMOLITIONS SYSTEM

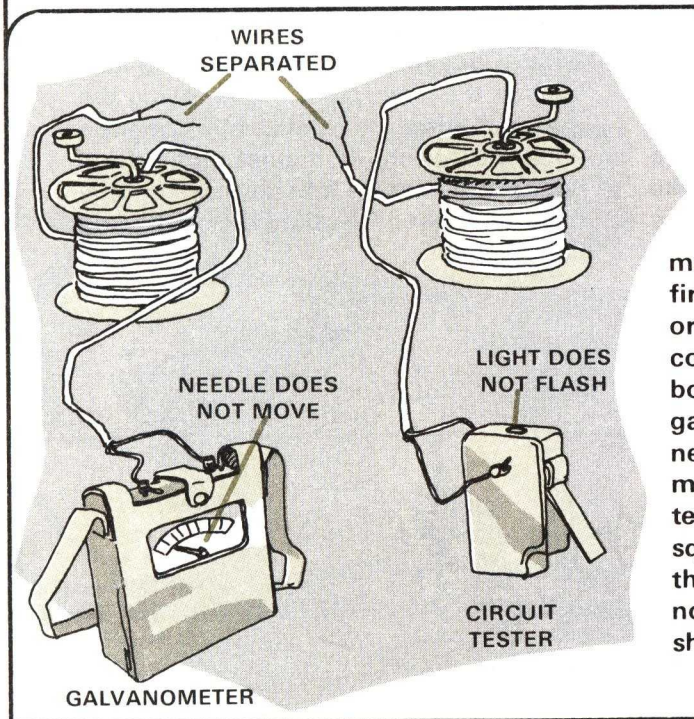
For the electric demolition method, troops must follow several steps.



STEP 1
Lay Firing Wire

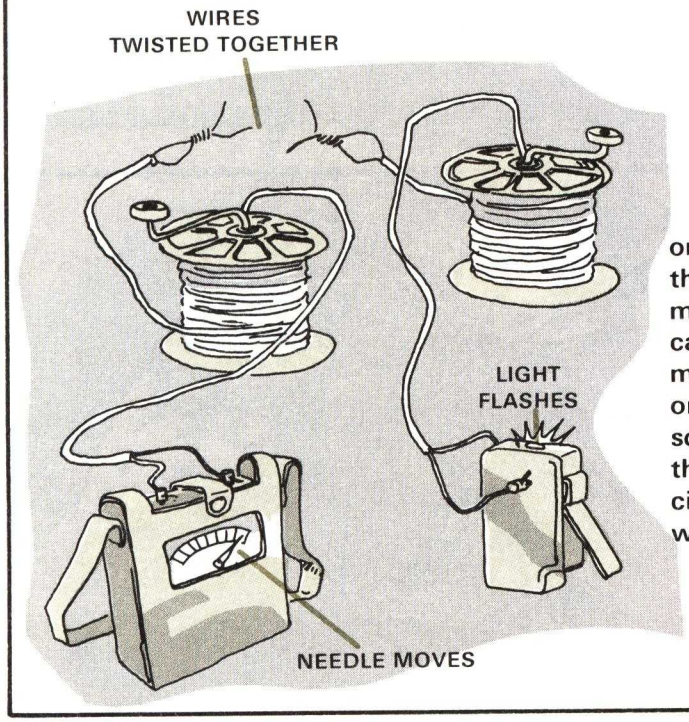
After locating a safe firing position, lay out your firing wire from the charge to the firing position. Before leaving the charge area, anchor the wire to something. **ALWAYS KEEP THE FIRING DEVICE WITH YOU — DO NOT LEAVE IT AT THE FIRING POSITION.**

ELECTRIC DEMOLITIONS SYSTEM (CONTINUED)



STEP 2
Check Firing Wire

Check the firing wire with a galvanometer or circuit tester to make sure the firing wire does not have a short circuit or a break. Separate the firing wire conductors (bare ends of the wire) at both ends. Touch those at one end to the galvanometer/circuit tester posts. The needle on the galvanometer should not move, nor should the light on the circuit tester come on when the handle is squeezed. If either the light comes on or the needle moves, that firing wire should not be used because the firing wire has a short.

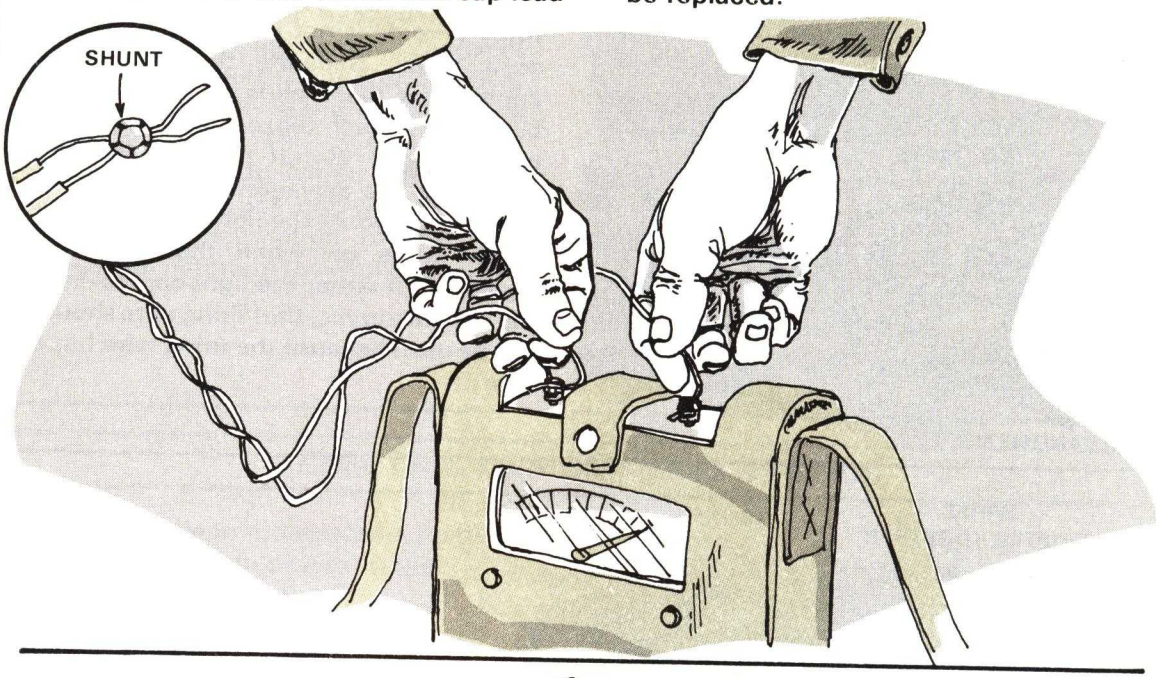


Twist the conductors together at one end of the firing wire and touch those at the other end to the galvanometer or circuit tester posts. This should cause a wide deflection of the galvanometer needle or cause the light to come on in the circuit tester when the handle is squeezed. No movement of the needle in the galvanometer or no light on the circuit tester indicates a break in the wire.

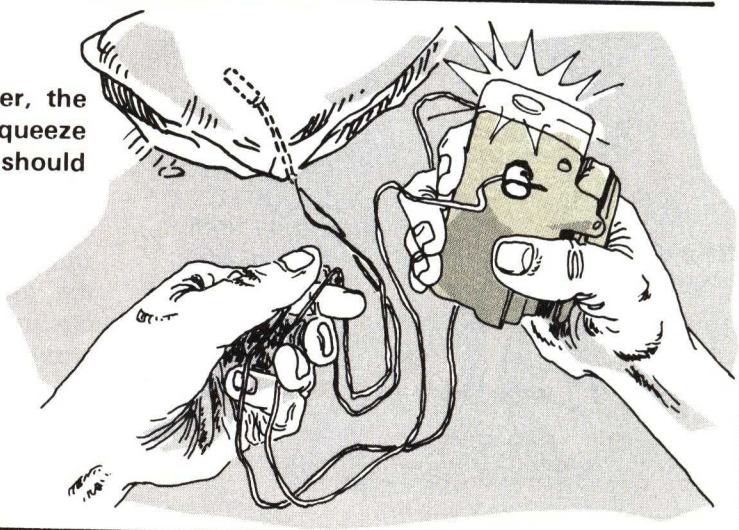
ELECTRIC DEMOLITIONS SYSTEM (CONTINUED)

STEP 3
Check Cap

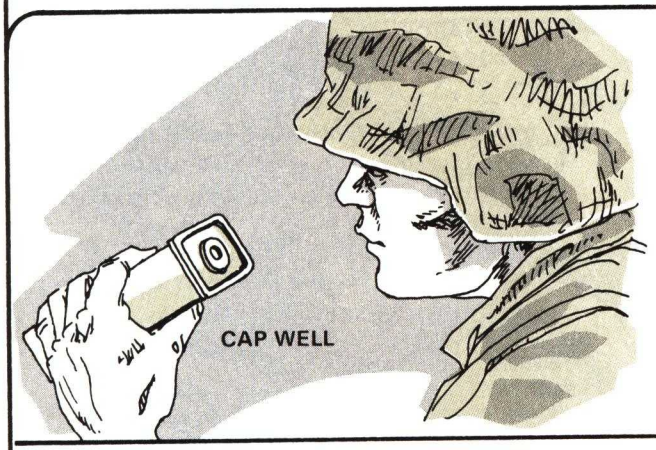
Check the blasting cap with a galvanometer or circuit tester to make sure it does not have a short. Remove the short circuit shunt. Touch one cap lead wire to one post and the other cap lead wire to the other post. When using the galvanometer, the needle should make a wide deflection. If it does, the cap is good. If the needle fails to move or only makes a slight deflection, the cap should be replaced.



When using the circuit tester, the light should come on when you squeeze the handle. If it does not, the cap should be replaced.

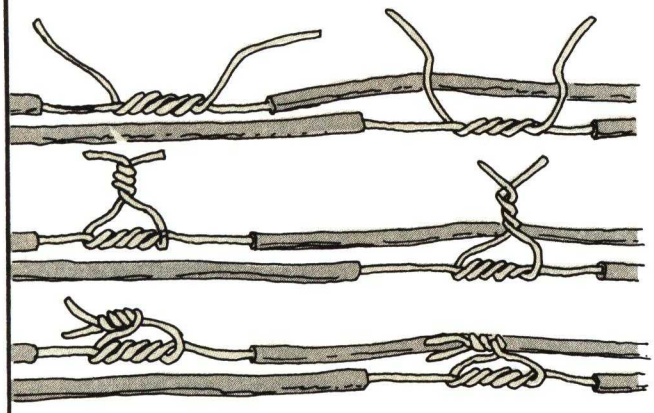


ELECTRIC DEMOLITIONS SYSTEM (CONTINUED)



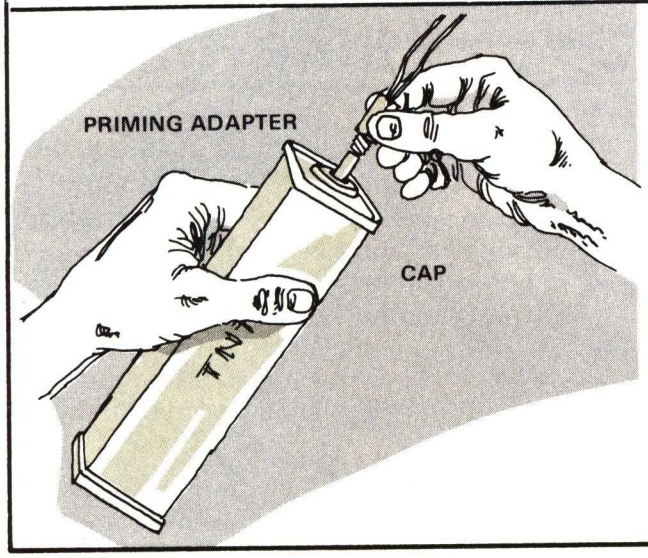
STEP 4
Clear Cap Well

Clear the cap well of a block of TNT or push a hole about the size of a blasting cap in a block of C4 plastic explosive.



STEP 6
Splice Firing Wires to Cap Wires

Splice lead wires of cap to firing wires (Western Union pigtail).



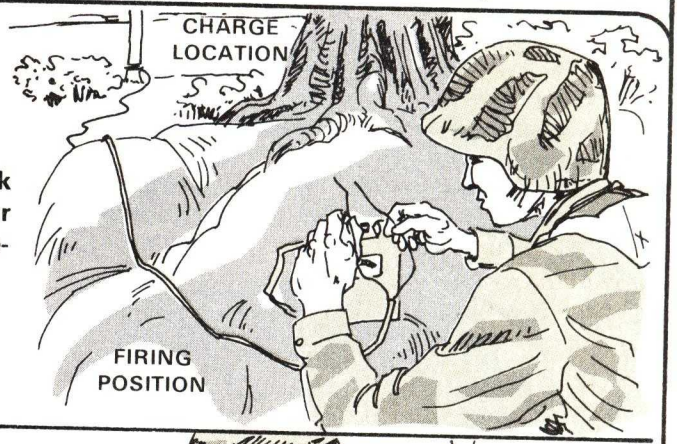
STEP 5
Insert Cap

Insert the cap into cap well of the TNT and secure with priming adapter or tape, or insert the cap into the hole you made in the C4 and mold the explosive around the cap.

ELECTRIC DEMOLITIONS SYSTEM (CONTINUED)

STEP 7
Check Wire Circuit

Move to firing position and check the wire circuit with the galvanometer or circuit tester. (Same technique as described previously.)



STEP 8
Fasten Blasting Machine

Fasten firing wires to the posts of the blasting machine.

STEP 9
Fire the Charge

Operate the blasting machine to fire the charge.

ELECTRIC DEMOLITIONS SYSTEM (CONTINUED)

STEP 10
Check a Misfire

If the circuit checked out and the blasting machine does not set the charge off, there is a misfire.

If an untamped charge misfires, investigate immediately. If the charge is tamped, wait 30 minutes before investigating.

To check a misfire, follow these steps:

- Check the firing wire connection to the blasting machine to be sure that the contacts are good.
- Make two or three more attempts to fire the charge.
- Try to fire again using another blasting machine.
- Disconnect the firing wire from the blasting machine and shunt the ends of the wire.
- Move to the charge site to investigate.
- Check the entire circuit, including the firing wire, for breaks and short circuits.
- Make no attempt to remove the primer or the charge.
- Place a new primed charge beside the misfire charge if the fault has not been found.
- Disconnect the old blasting cap wires from the firing wire and shunt the ends of the blasting cap wires.
- Finally, attach the new blasting cap wires to the firing circuit wires before priming the charge with the blasting cap. Prime the charge with the cap and attempt to fire again. The detonation will dispose of the misfire charge.

DETONATING CORD FIRING SYSTEM

Methods of Use. Of all the firing systems for explosives, a detonating cord firing system is probably the most versatile and in many cases the most easily installed. It is especially applicable for underwater and underground blasting because the blasting cap of the initiating system may remain above the water or ground.

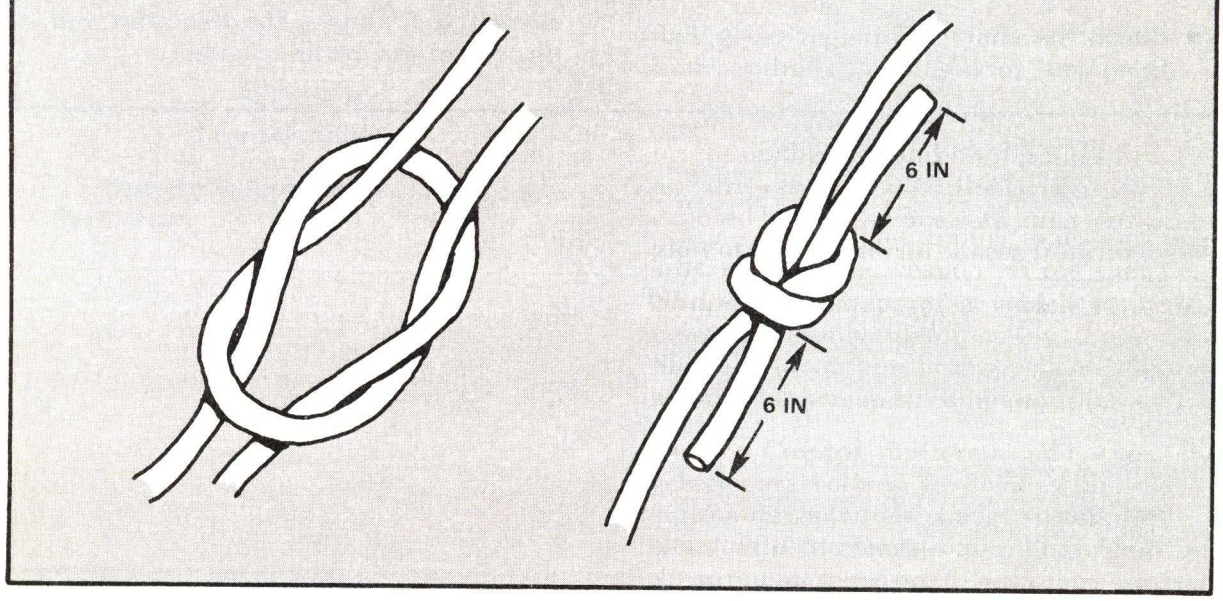
An electric system consisting of an electric blasting cap, initiated by a blasting machine or other power source, or a

nonelectric blasting cap initiated by a fuse igniter and a length of time blasting fuse, is used to initiate detonating cord.

The blasting cap, electric or nonelectric, is attached to a point 6 inches from the free end of the detonating cord by numerous wraps of string, wire, cloth, or tape.

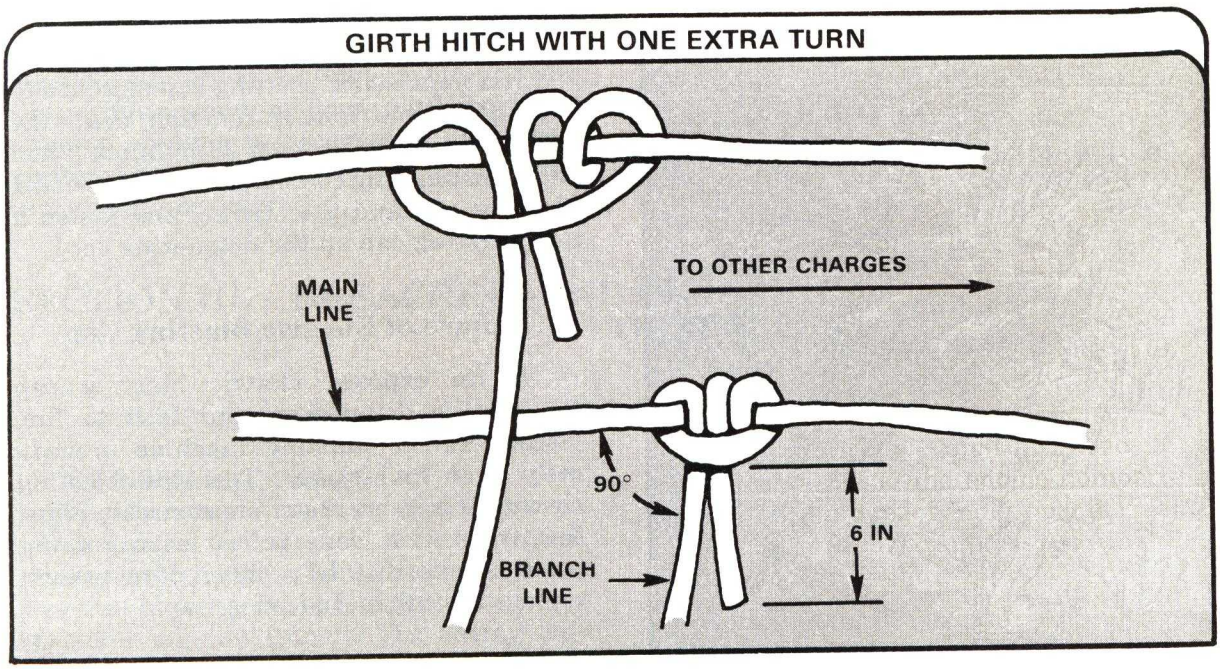
Detonating Cord Connections. A detonating cord clip or square knot pulled tight is used to splice the ends of detonating cord. At least a 6-inch length should be left free at both sides of the knot. When fabric is used to cover the detonating cord, the fabric must not be removed. The knot may be placed in water or in the ground but the cord must be detonated from a dry end.

SQUARE KNOT CONNECTIONS



Branch Line Connections

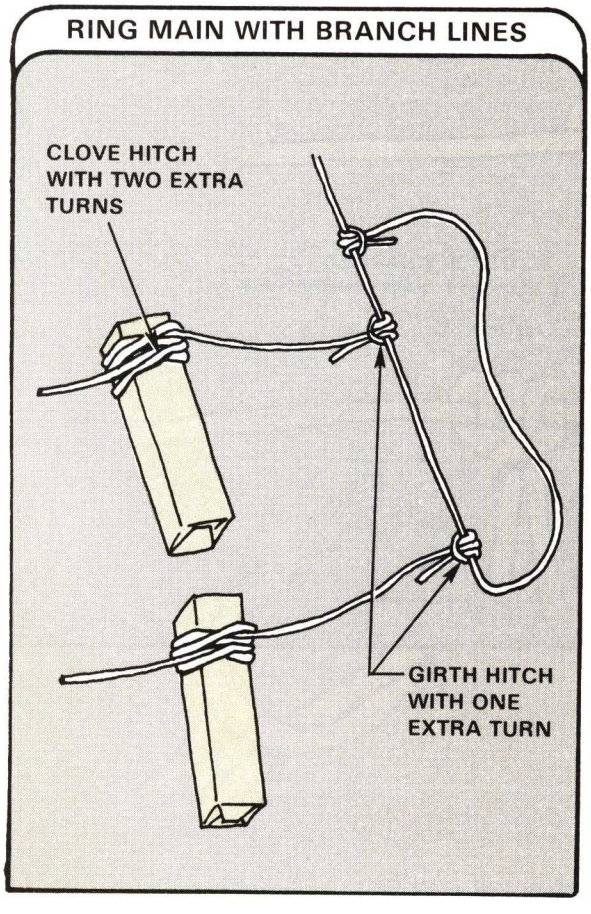
A branch line is fastened to a main line by means of a clip or a girth hitch with one extra turn. The angle formed by the branch line and the cap end of the main line should not be less than 90 degrees from the direction from which the blast is coming; at a smaller angle, the branch line may be blown off the main line without being detonated. At least 6 inches of the running end of the branch line is left free beyond the tie.



Ring Main

A ring main is made by bringing the main line back in the form of a loop and attaching it to itself with a girth hitch with one extra turn. This will detonate an almost unlimited number of charges. The ring main

makes the detonation of all charges more positive because the detonating wave approaches the branch lines from both directions and the charges will be detonated even when there is one break in the ring main. Branch line connections should be made perpendicular to the ring main. Kinks in lines should be avoided, and curves and angles should not be sharp. Any number of branch lines may be connected to the ring main, but a branch line is never connected at a point where the ring main is spliced. In making detonating cord branch line connections, avoid crossing lines. However, if this is necessary, be sure to have at least one foot of clearance at all points between the detonating cords; otherwise, the cords will cut each other and destroy the firing system.



Misfires. Misfires may result from faulty blasting caps, detonating cords, branch lines, or charges. The procedures taken to locate and correct the cause of a misfire are as follows:

Failure of Nonelectric Blasting Cap

If a nonelectric blasting cap attached to detonating cord fails to function, delay the investigation for at least 30 minutes. Then cut the detonating cord main line between the blasting cap and the charge, and fasten a new blasting cap on the detonating cord.

Failure of Electric Blasting Cap

If an exposed electric blasting cap fastened to detonating cord fails to fire, disconnect the blasting machine immediately and investigate. Test the blasting circuit for any breaks or short circuit. Short the firing wire leads before leaving firing position to correct the problem. If necessary, replace the original blasting cap.

Failure of Detonating Cord

If detonating cord fails to function at the explosion of an exposed electric or nonelectric blasting cap, investigate immediately. Attach a new blasting cap to the detonating cord, taking care to fasten it properly.

Failure of Branch Line

If the detonating cord main line detonates but a branch line fails, fasten a blasting cap to the branch line and fire it separately.

Failure of Charge to Explode

If the charge is above ground, and the detonating cord leading to a charge detonates but the charge fails to explode, delay investigation until it is certain that the charge is not burning. If the charge is in the ground, wait 30 minutes. If the charge is intact, insert a new primer. If the charge is scattered by the detonation of the original detonating cord, reassemble as much of the original charge as possible, place a new charge if necessary, and reprime. Make every attempt possible to recover all explosives scattered by misfire, particularly those used in training exercises.

SECTION III. BREACHING AND CLEARING OBSTACLES

GENERAL

Obstacles are used to halt or to slow units, or to cause them to move into an area selected as a kill zone. If the enemy has selected such an area, he will have prepared it so that he can inflict great damage on any opponent moving into it. The enemy will exploit existing obstacles such as defiles, rivers, thick woods, swamps, cliffs, canals, and built-up areas, and complement them with reinforced obstacles. Leaders must know the tactics and techniques used to overcome reinforced obstacles.

Some obstacles may not restrict dismounted elements but will restrict vehicular

movement. The platoon may have to clear obstacles to help vehicles go forward. Obstacles are normally covered by enemy direct and indirect fire to keep attacking troops from breaching them. The platoon may not be able to keep the enemy from knowing that it is going to breach, but it should try to keep the enemy from knowing where and when it will try to breach.

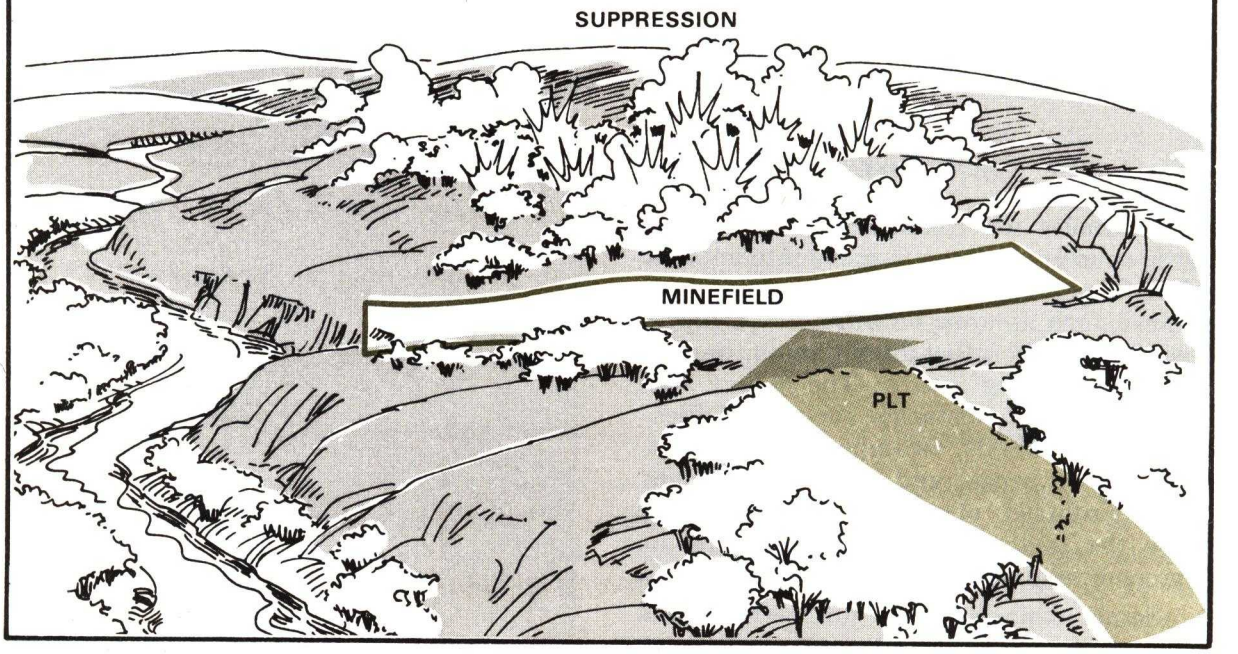
MINEFIELDS

To maintain the momentum of an attack, the platoon must be prepared to breach minefields.

BREACHING A MINEFIELD

STEP 1
Suppress the Enemy

Suppress the enemy covering the obstacle. Artillery and mortar fire is used to suppress the enemy. If indirect fire is not available, grenade launchers and machine gun fire are used.



BREACHING A MINEFIELD (CONTINUED)

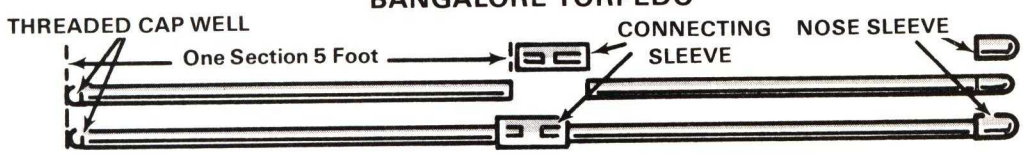
STEP 2
Obscure with Smoke

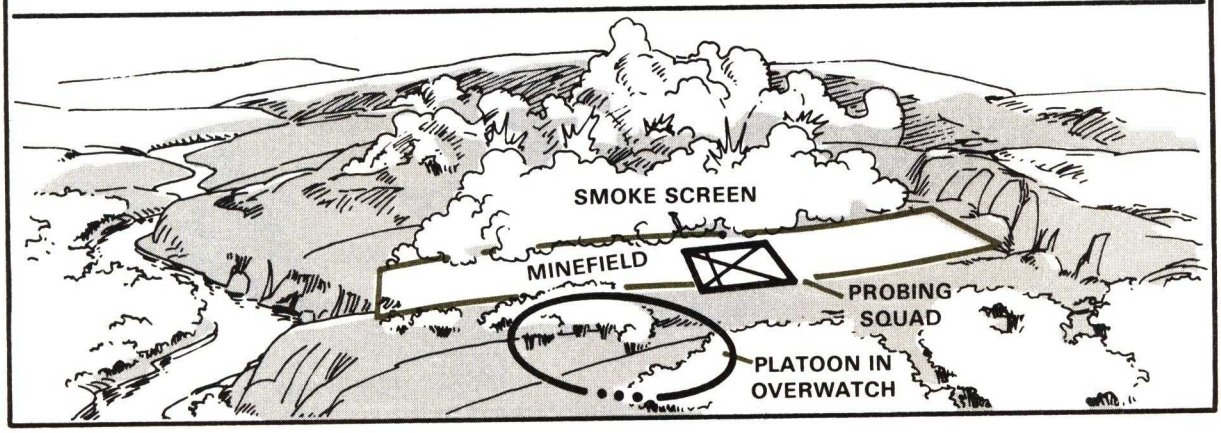
Request smoke to obscure the obstacle area and conceal friendly troops.

STEP 3
Probe and Mark Mines

Probe a footpath/lane and mark the mines that are found. Lead elements may be accompanied by engineers equipped with the CEV and the M173 line charge as well as minerollers located with armor units. The preferred way to clear a lane through a minefield is to use a rocket-propelled line charge or bangalore torpedo. The only way to clear a minefield without special equipment is to probe with pointed sticks or bayonets. One squad probes while the platoon (-) overwatches.

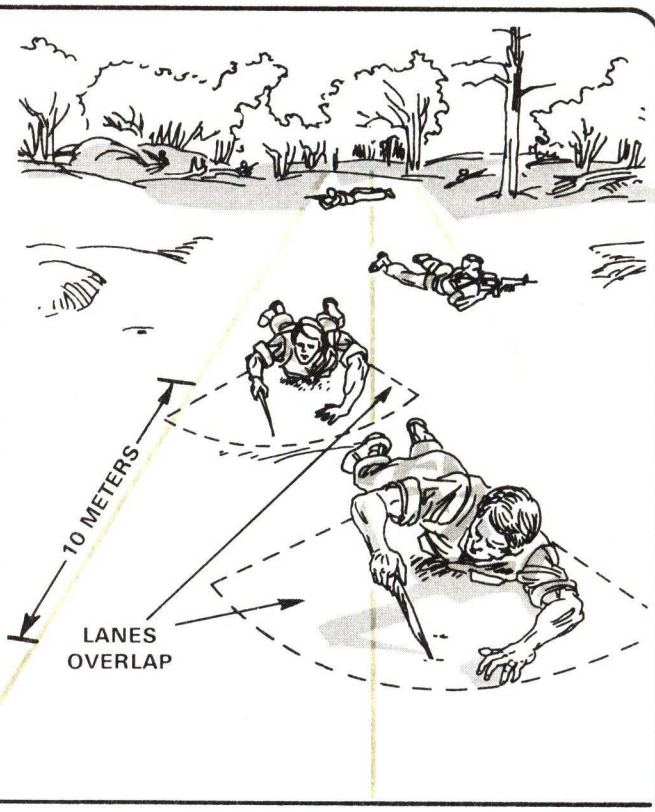
BANGALORE TORPEDO





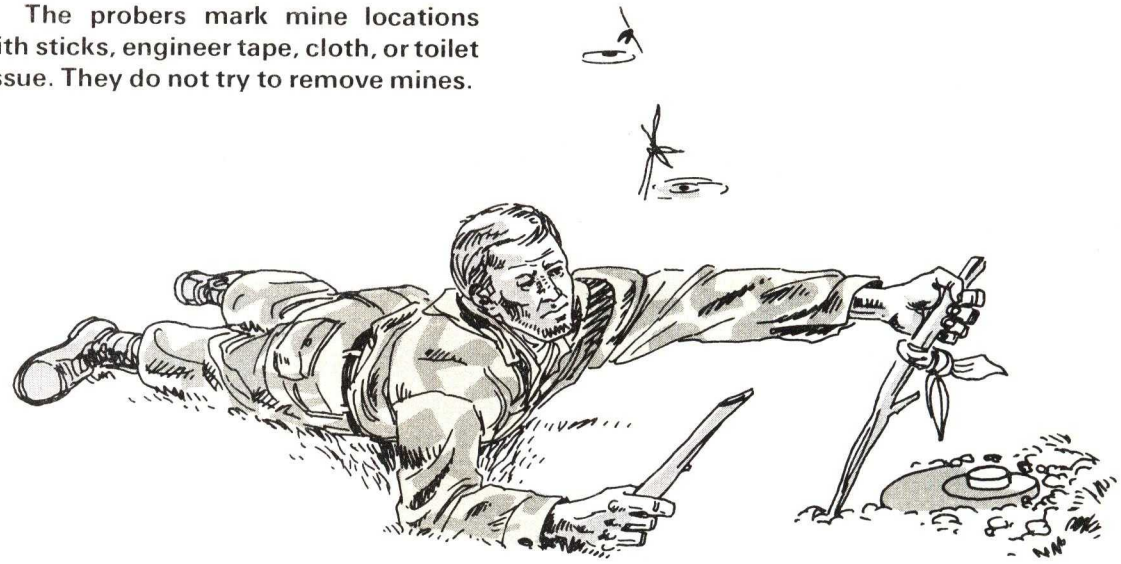
BREACHING A MINEFIELD (CONTINUED)

STEP 3
(Continued)



The squad probing the footpath/lane through the minefield uses two probers; one in front, clearing a lane wide enough to crawl through; and a second one, clearing 10 meters behind the first prober and slightly to one side so that their lanes overlap. The probers should not carry their weapons, field packs, load-carrying equipment, helmets, etc. Their equipment is carried by other squad members. Two other men crawl along behind to secure the probers, to carry additional supplies, or to take a prober's job if one becomes a casualty. The probers should be rotated often to keep them from getting tired and/or careless.

The probers mark mine locations with sticks, engineer tape, cloth, or toilet tissue. They do not try to remove mines.

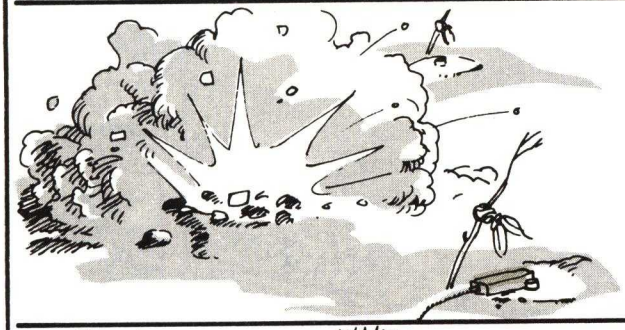


BREACHING A MINEFIELD (CONTINUED)

STEP 4

Secure the Far Side

As soon as the clearing squad has cleared a lane, the squad moves through the lane and secures the far side.



STEP 5

Destroy Marked Mines

Destroy the marked mines with explosives or grappling hooks.

STEP 6

Mark Cleared Lane

STEP 7

Move Unit Through the Obstacle

ABATIS

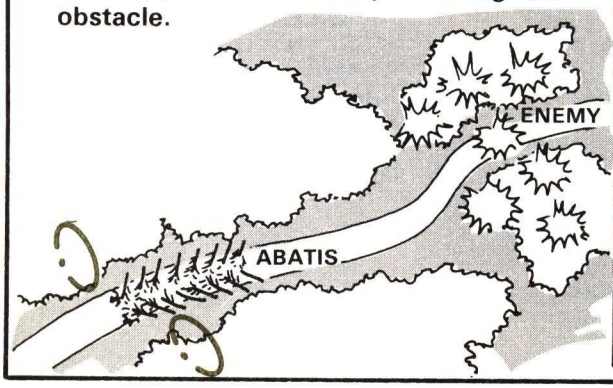
An abatis is an obstacle created by cutting down trees so that their tops are crisscrossed and pointing toward the expected enemy direction. It is most effective for stopping vehicles in a forest. The trees are left attached to the stumps as high as possible to make removal more difficult. This obstacle may be reinforced with mines and booby traps. There are some basic steps to follow to clear an abatis.

CLEARING AN ABATIS

STEP 1

Suppress the Enemy

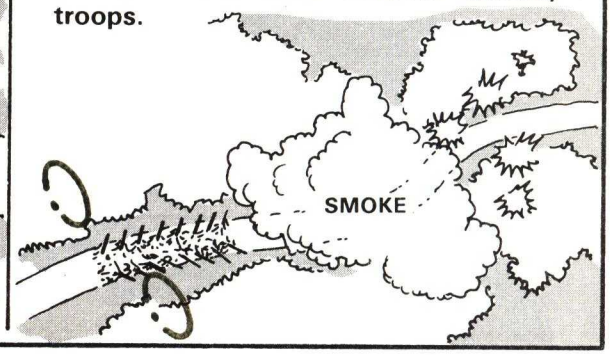
Suppress the enemy covering the obstacle.



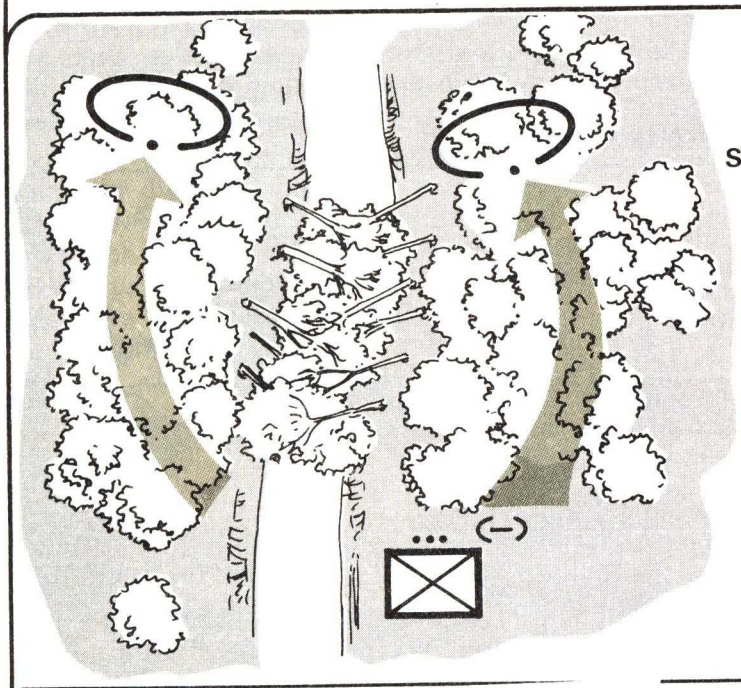
STEP 2

Obscure with Smoke

Request smoke to obscure the obstacle area and conceal friendly troops.



CLEARING AN ABATIS (CONTINUED)



STEP 3

Secure the Far Side

Secure the far side of the obstacle.

STEP 4

Reduce the Obstacle

Mines and booby traps must first be found and then neutralized by exploding them with one pound of demolitions, or by pulling their tripwires with grappling hooks and long ropes. Use pioneer tools or explosives to cut the trees from their stumps. Tracked and wheeled vehicles can be used to pull the logs out of the road.

LOG CRIB

A log crib is an obstacle constructed of logs, earth and rocks. The logs are used to make triangular or rectangular cribs, which are filled with earth and rock. These are used to block narrow roads and defiles. There are some basic steps to follow to clear a log crib.

CLEARING A LOG CRIB

STEP 1

Suppress the Enemy

Suppress the enemy covering the obstacle.

STEP 2

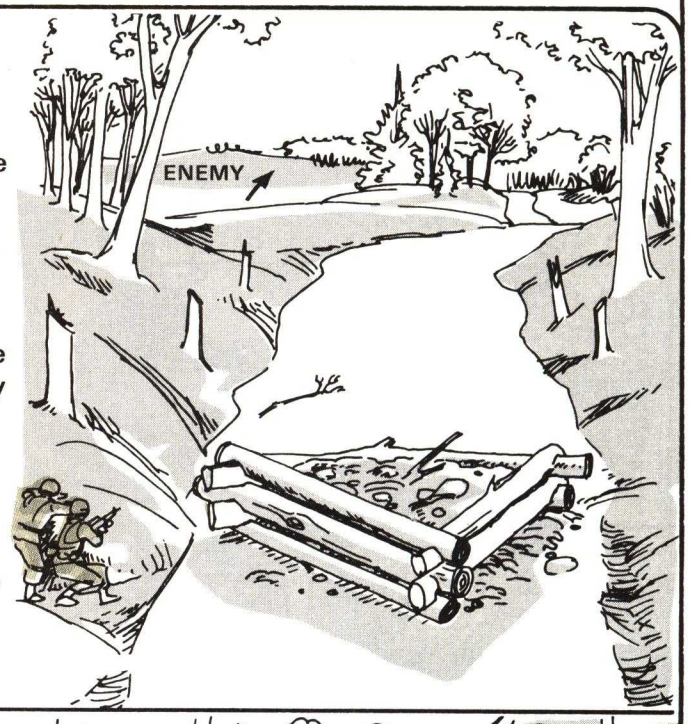
Obscure with Smoke

Request smoke to obscure the obstacle area and conceal friendly troops.

STEP 3

Secure the Far Side

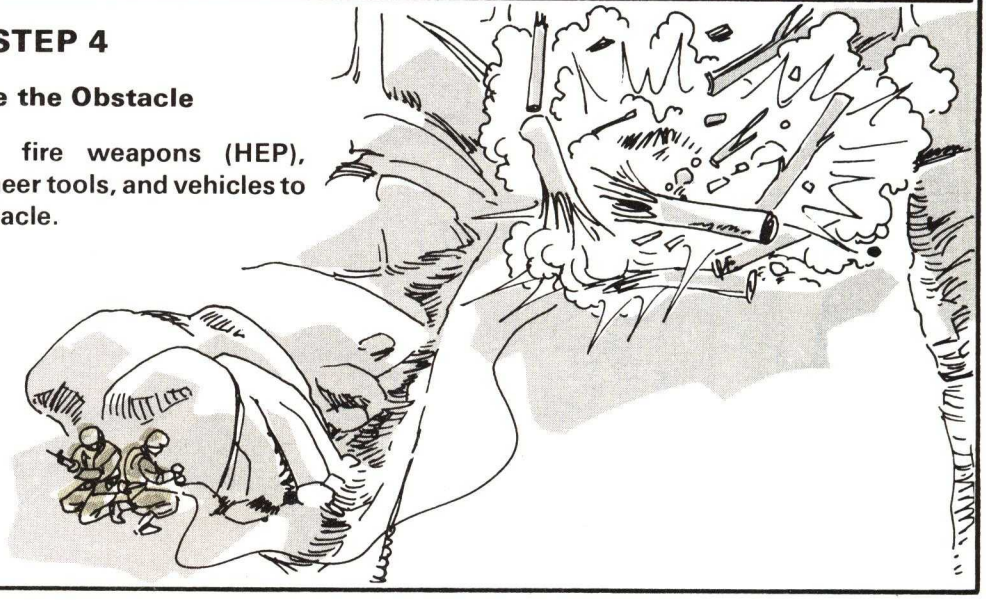
Secure the far side of the obstacle.



STEP 4

Reduce the Obstacle

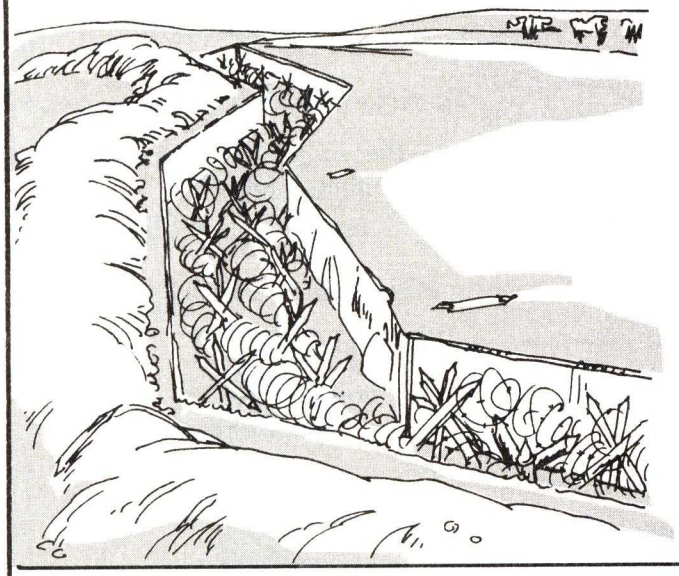
Use direct fire weapons (HEP), explosives, pioneer tools, and vehicles to reduce the obstacle.



TANK DITCHES

Tank ditches are usually in open terrain. They are at least 4 meters (13 feet) wide and 1.8 meters (5 feet) deep. The enemy may put barbed wire and mines in them to keep tank crews or infantry from dismounting and using the ditch for shelter. He may prepare the approaches, sides, and bottom of the ditch with antitank and antipersonnel mines or chemicals to make breaching difficult. There are several steps to follow to clear a tank ditch.

CLEARING A TANK DITCH



STEP 1

Suppress the Enemy

Suppress the enemy covering the obstacle.

STEP 2

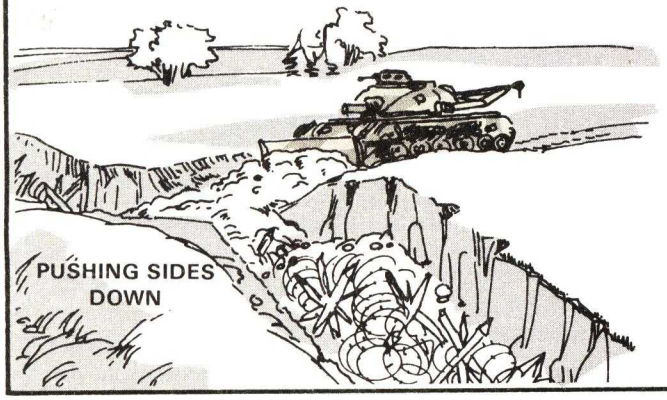
Obscure with Smoke

Request smoke to obscure the obstacle area and conceal friendly troops.

STEP 3

Secure the Far Side

Secure the far side of the obstacle.



STEP 4

Reduce the Obstacle

Use an armored combat earth mover, tank with blade, or combat engineer vehicle to push down the side of the ditch. Explosives may also be used to blow down and slope the sides of the ditch.

CRATERS

The enemy uses explosives to create road craters. He will leave the loose soil around the sides of the crater to make it difficult for a tank to back out. A crater is cleared using the same steps as with a tank ditch.

WIRE

The enemy uses wire obstacles to separate infantry from armor. He also uses them as roadblocks against wheeled and tracked vehicles. There are several steps used to breach a wire obstacle.

BREACHING A WIRE OBSTACLE

STEP 1

Suppress the Enemy

Suppress the enemy covering the obstacle.

STEP 2

Obscure with Smoke

Request smoke to obscure the obstacle area and conceal friendly troops.

STEP 3

Clear a Lane Through the Wire

Use wire cutters, bangalore torpedoes, or explosives to remove the wire. Watch out for antipersonnel mines and booby traps. Mark only mines and booby traps with engineer tape, cloth, or anything recognizable. One squad breaches while the platoon (-) overwatches. Tank fire (HEP), combat engineer vehicle fire, and massed indirect and direct fire can help breach the wire.

STEP 4

Secure the Far Side

As soon as the clearing squad has cleared a lane, the squad moves through the lane and secures the far side.

STEP 5

Destroy Marked Mines

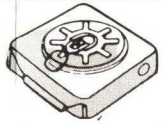
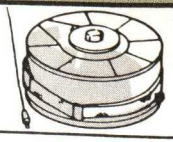
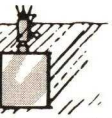
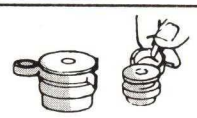
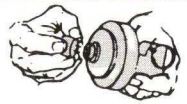
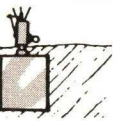
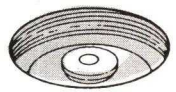
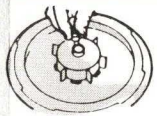
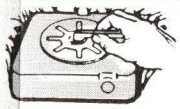
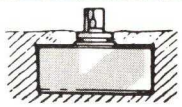
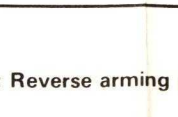
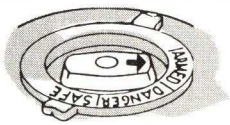
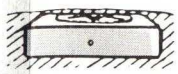
Destroy the marked mines with explosives or grappling hooks.

STEP 6

Mark Cleared Lane

STEP 7

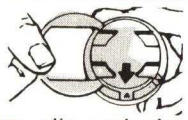
Move Unit Through the Obstacle

UNDING ERSONNEL MINES	BLAST ANTIPERSONNEL MINE (ELSIE)	HEAVY ANTITANK MINES	PLASTIC HEAVY ANTITANK MINE	METALLIC (KILLER) ANTITANK MINE
				
8.25 lb Steel M605 (combination) 8 to 20 lbs 3 to 10 lbs .6 to 1.2m 30m	Weight 2.75 oz Explosive 1/3 oz shape charge Fuze integral (w/ball release) Functioning 14 to 26 lbs Penetrate boot and foot	Weight 30 lbs Explosive 22 lbs Fuze M603 Secondary fuze wells 2 Functioning 300 to 400 lbs	Weight 28 lbs Explosive 21 lbs Fuze M606 integral (with pressure plate) Secondary fuze wells 2 Functioning 350 to 500 lbs	Weight 18 lbs Explosive 10.5 lbs Fuze M607 Functioning 290 lbs (Pressure on pressure ring or 20-degree deflection of tilt rod)
			Remove pressure plate fuze.	
lug and screw in fuze.	Push mine into ground. Keep dust cap in place. If ground is hard, dig hole with bayonet.	Remove plug and inspect fuze well.		Remove closing plug, insert M120 booster in bottom, and replace closing plug.
			Remove shipping plug; check position of striker (offset). Remove safety fork, then turn dial to ARMED position. Check position of striker (center). Turn to SAFE and replace safety fork.	
installation	Remove dust cap.	Inspect fuze and remove safety.		Remove closure assembly from fuze.
			 Screw threaded detonator into detonator well.	
installation	Insert charge.	Insert fuze.		Remove shipping plug from mine and screw in tilt rod extension.
			 Place mine in hole, remove safety fork; and turn dial to ARMED.	
first to anchor, then to	Remove safety clip.	Replace plug with dial in safe position.		Bury mine.
			 Complete camouflage.	
safety pin first. The should fall free. Then ety.	TO DISARM: Reverse arming procedure.	Turn dial to ARMED.		Remove safety (pull-ring assembly) and complete camouflage.
rse arming procedure.		TO BURY: Put mine in hole with pressure plate at or slightly above ground level. TO DISARM: Reverse arming procedure.	TO BURY: Put mine in hole with pressure plate at or slightly above ground level. TO DISARM: Reverse arming procedure.	For pressure type mine, bury with fuze cap flush with ground surface. Tilt rod-mines should be seated firmly in snug-fitting hole. Most effective in tall brush or grass. TO DISARM: Reverse arming procedure.

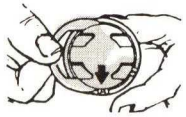
M14 BLAST ANTIPERSONNEL MINE

Weight ____ 3.33 oz
Explosive ____ 1 oz TETRYL
Fuze ____ integral (with Belleville spring)
Functioning ____ 20 to 35 lbs
Penetrate boot and foot

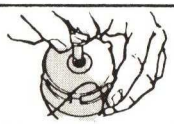
Unscrew shipping plug from bottom of mine. Turn pressure plate to ARMED position with arming tool.



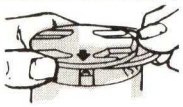
Remove safety clip and check for malfunctioning.



Replace safety clip.



Screw detonator into detonator well.



Bury mine and remove safety clip.

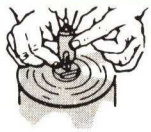
TO BURY: Pressure plate should be slightly above ground level.

TO DISARM: Insert safety clip and remove detonator.

CAUTION: Repeated turning of arming dial may cause excessive wear.

M16A1 BOUNDING ANTIPERSONNEL MINES

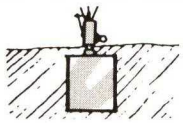
Weight ____ 8.25 lb
Projectiles ____ Steel
Fuze ____ M605 (combination)
Functioning:
Pressure ____ 8 to 20 lbs
Pull ____ 3 to 10 lbs
Bounding height ____ .6 to 1.2m
Casualty radius ____ 30m



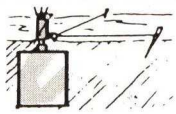
Remove shipping plug and screw in fuze.

GROUND LEVEL

Pressure installation



Tripwire installation



Attach tripwires — first to anchor, then to pull ring.

Remove locking safety pin first. The interlocking pins should fall free. Then remove positive safety.

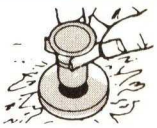
TO DISARM: Reverse arming procedure.

M25 BLAST ANTIPERSONNEL MINE (ELSIE)

Weight ____ 2.75 oz
Explosive ____ 1/3 oz shape charge
Fuze ____ integral (w/ball release)
Functioning ____ 14 to 26 lbs
Penetrate boot and foot

Push mine into ground. Keep dust cap in place. If ground is hard, dig hole with bayonet.

Remove dust cap.



Insert charge.

Remove safety clip.

TO DISARM: Reverse arming procedure.

References

REQUIRED PUBLICATIONS

Required publications are sources which users must read in order to understand and use FM 7-7J.

ARMY REGULATIONS (FMs)

220-58	Organization and Training for Nuclear, Biological, and Chemical Defense
310-25	Dictionary of United States Army Terms
310-50	Authorized Abbreviations and Brevity Codes

FIELD MANUALS (FMs)

21-75	Combat Skills of the Individual Soldier
71-1J	The Tank and Mechanized Infantry Company Team
101-5-1	Operational Terms and Graphics

TECHNICAL MANUALS (TMs)

9-2350-252-10-1	Hull for Infantry Fighting Vehicle M2
9-2350-252-10-2	Turret for Infantry Fighting Vehicle M2

RELATED PUBLICATIONS

Related publications are sources of additional information. Users do not have to read them to understand FM 7-7J.

FIELD MANUALS (FMs)

3-3	NBC Contamination Avoidance
3-4	NBC Protection
3-5	NBC Decontamination
3-100	NBC Operations
5-25	Explosives and Demolitions
5-100	Engineer Combat Operations
7-7	The Mechanized Infantry Platoon and Squad (APC)

FIELD MANUALS (FMs)
CONTINUED

7-8	The Infantry Platoon and Squad (Infantry, Airborne, Air Assault, Ranger)
17-95	Cavalry
20-22	Vehicle Recovery Operations
20-32	Mine/Countermine Operations at the Company Level
21-2	Soldier's Manual of Common Tasks (Skill level 1)
21-3	Soldier's Manual of Common Tasks (Skill level 2, 3, & 4)
21-60	Visual Signals
23-1 (TEST)	Bradley Fighting Vehicle Gunnery
23-9	M16A1 Rifle and Rifle Marksmanship
23-14	Squad Automatic Weapon (SAW), M249
23-23	Antipersonnel Mine M18A1 and M18 (Claymore)
23-30	Grenades and Pyrotechnic Signals
23-31	40-mm Grenade Launchers M203 and M79
23-33	66-mm HEAT Rocket, M72A1 and M72A2
23-67	Machinegun 7.62-mm, M60
24-1	Combat Communications
24-18	Field Radio Techniques
44-8	Small Unit Self-Defense against Air Attack
90-10-1	An Infantryman's Guide to Urban Combat
90-13	River Crossing Operations
100-5	Operations
101-10-1	Staff Officers' Field Manual Organization, Technical, and Logistic Data

TRAINING CIRCULAR (TC)

7-2	Bradley Drills

TECHNICAL MANUALS (TMs)

3-220	Nuclear, Biological, and Chemical Decontamination
3-6665-225-12	Operator's and Organizational Maintenance Manual for Chemical Agent Alarm

DA FORMS

5517-R	Standard Range Card

INTERNATIONAL AGREEMENTS

Certain provisions of this field manual are the subject of the international standardization agreements listed below.

TITLE	NATO STANAG	QSTAG/AS
Basic Military Road Traffic Regulations	2025	591
Line Minefield Laying, Recording, Reporting, and Marking Procedures	2036	518
First Aid and Hygiene Training in NBC Operations	2358	—
Standard Procedures for Infantry/Armored Fighting Vehicle Target Identification	—	239
Mines, Anti-Personnel, M16A2, and Fuze, Mine Combination M605	—	255
Combat Identification Markings for Armored Fighting Vehicles (AFV)	—	266

GLOSSARY

Acronyms and Abbreviations

**AA	assembly area
ADA	air defense artillery
APC	armored personnel carrier
APDS	armor-piercing discarding sabot
ATGM	antitank guided missile
AVLB	armored-vehicle-launched bridge
*BC	Bradley commander
BFV	Bradley fighting vehicle
BMNT	beginning morning nautical twilight
*BMP	(Threat fighting vehicle)
*BOT	burst-on-target
*BRDM	(Threat vehicle)
*BTR	(Threat vehicle)
CAS	close air support
CDR	commander
CEOI	communications-electronics operation instructions
cGy	centigrays (rad)
COMSEC	communications security
CP	command post
*CVC	combat vehicle crew (helmet)
*DLIC	detachment left in contact
ECCM	electronic counter-countermeasures
ECM	electronic countermeasure
**EENT	end evening nautical twilight
EMP	electromagnetic pulse
FA	field artillery
FAC	forward air controller
FASCOM	Field Army Support Command
FD	fire direction
FDC	fire direction center
FEBA	forward edge of the battle area
*FFAR	free flight aerial rocket
1SG	first sergeant
**FIST	fire support team
FO	forward observer
*FPF	final protective fire

***FPL**	final protective line
***FPW**	firing port weapon
***FRAGO**	fragmentary order
FSO	fire support officer
GSR	ground surveillance radar
HE	high explosive
***HEDP**	high explosive dual-purpose
***HEI-T**	high explosive incendiary-tracer
***hp**	horsepower
HQ	headquarters
***ISU**	integrated sight unit
int	intercommunication (intercom)
***ITV**	improved TOW vehicle
kmph	kilometers per hour
LAW	light antitank weapon
***LBE**	load-bearing equipment
LC	line of contact
***LCE**	load-carrying equipment
LD	line of departure
ldr	leader
LZ	landing zone
MANPADS	man-portable air defense system
***METT-T**	mission, enemy, terrain, troops, and time
MI	military intelligence
MIJI	meaconing, intrusion, jamming, and interference
MOPP	mission oriented protection posture
***MOUT**	military operations on urbanized terrain
mph	miles per hour
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
***NDL**	nuclear defense levels
NUCWARN	nuclear attack warning
obj	objective
***OCOKA**	observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach
OP	observation post
OPCON	operational control
OPORD	operation order
OPSEC	operations security
***ORP**	objective rally point

**PD	point of departure
PDF	principal direction of fire
*PEWS	platoon early warning system
PL	phase line
**PLD	probable line of deployment
PLL	prescribed load list
plt	platoon
PMG	platoon master gunner
POL	petroleum, oils, and lubricants
PSG	platoon sergeant
PW	prisoner of war
RATELO	radiotelephone operator
ref pt	reference point
*REMS	remote sensor system
RP	release point
*RPG	(Threat antitank grenade launcher)
*SAW	squad automatic weapon
SIGSEC	signal security
SL	squad leader
SOP	standing operating procedure
SP	self-propelled; start point
SQD	squad
STANO	surveillance, target acquisition, night observation
*STB	supertropical bleach
*SUT	small-unit transceiver
TL	team leader
TOE	table(s) of organization and equipment
TOW	tube-launched, optically-tracked, wire-guided (a missile)
**TRP	target reference point
US	United States (of America)
USAF	United States Air Force
*VT	variable time (fuze)
**VTR	vehicle tracked recovery
XP	white phosphorus
XO	executive officer

*Not listed in current AR 310-50.

**Listed in current AR 310-50 but does not include this terminology.

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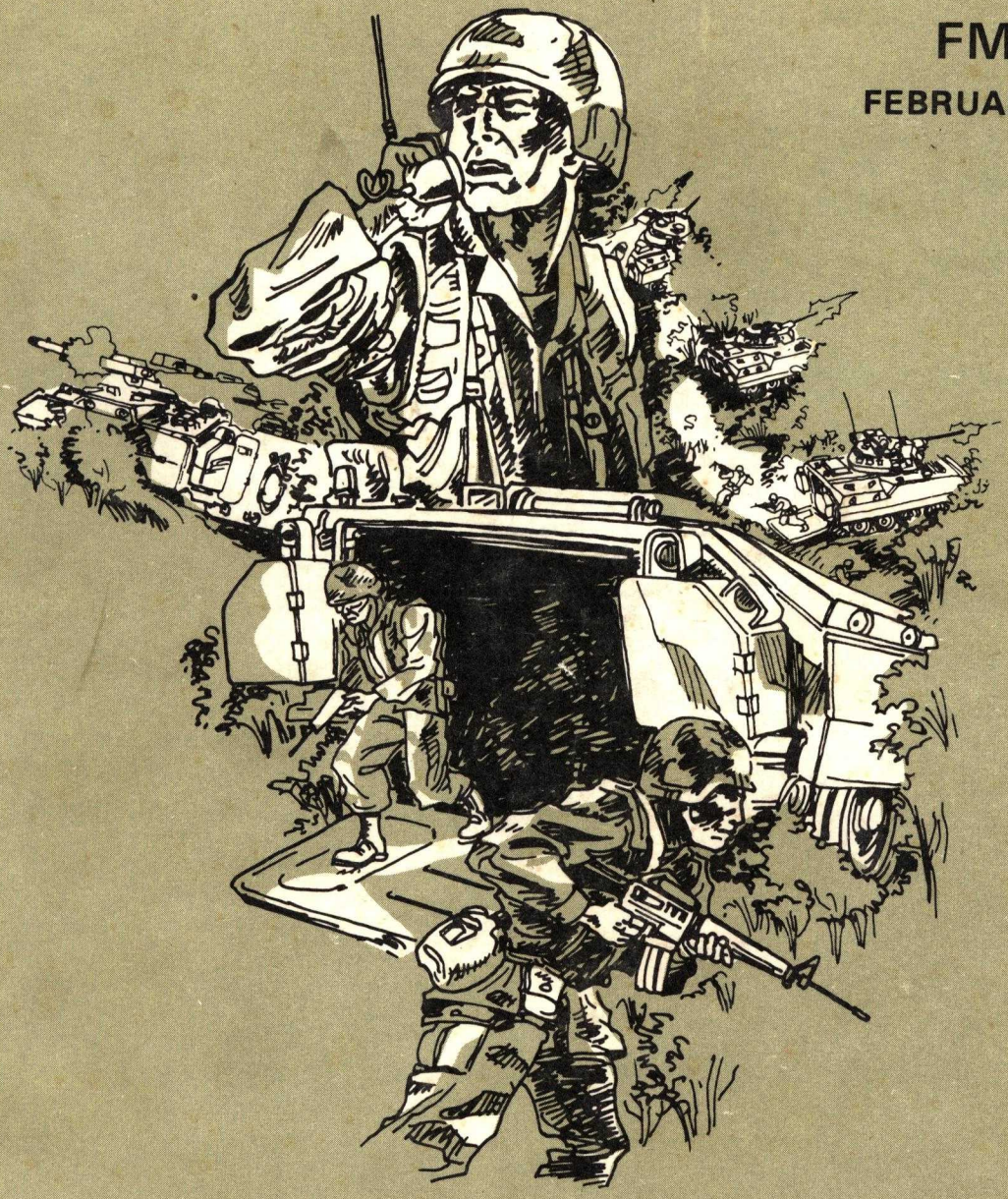

The Mechanized Infantry Platoon and Squad (Bradley)

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